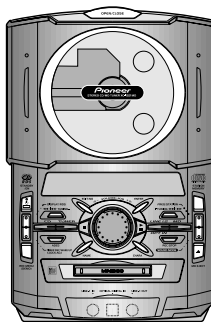


Service Manual

Pioneer



ORDER NO.
RRV2124

CD MD TUNER XC-IS21MD

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

| Type | Model | Power Requirement | Remarks |
|------|-----------|-----------------------------------|---------|
| | XC-IS21MD | | |
| ZYXJ | O | DC power supply from other system | |
| ZVXJ | O | DC power supply from other system | |

● This product is a system(s) component.

This product does not function properly when independent; to avoid malfunctions, be sure to connect it to the prescribed system component(s), otherwise damage may result.

| Component | System | Service Manual | Remarks |
|------------------------|-----------|----------------|---------------------|
| | IS-21MD | | |
| CD MD TUNER | XC-IS21MD | RRV2124 | This service manual |
| STEREO POWER AMPLIFIER | M-IS21 | RRV2129 | |
| SPEAKER SYSTEM | S-IS21 | RRV2128 | |

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PIONEER ELECTRONIC CORPORATION 4-1, Meguro 1-Chome, Meguro-ku, Tokyo 153-8654, Japan
PIONEER ELECTRONICS SERVICE, INC. P.O. Box 1760, Long Beach, CA 90801-1760, U.S.A.
PIONEER ELECTRONIC (EUROPE) N.V. Haven 1087, Keetberglaan 1, 9120 Melsele, Belgium
PIONEER ELECTRONICS ASIACENTRE PTE. LTD. 253 Alexandra Road, #04-01, Singapore 159936
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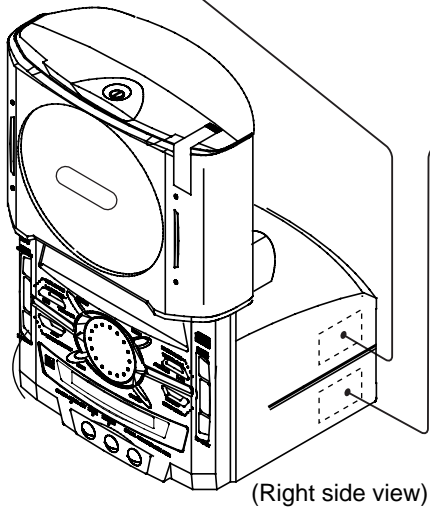
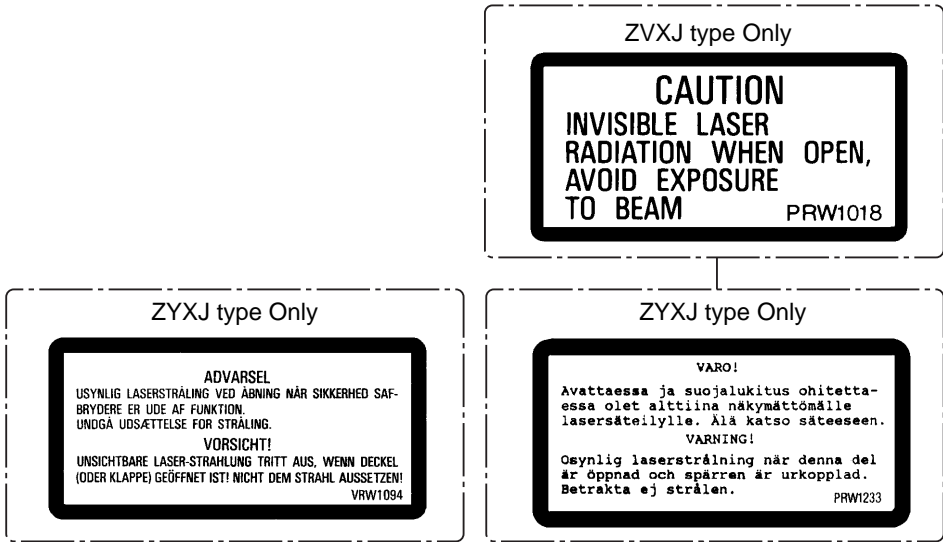
1. SAFETY INFORMATION

This service manual is intended for qualified service technicians; it is not meant for the casual do-it-yourselfer. Qualified technicians have the necessary test equipment and tools, and have been trained to properly and safely repair complex products such as those covered by this manual. Improperly performed repairs can adversely affect the safety and reliability of the product and may void the warranty. If you are not qualified to perform the repair of this product properly and safely, you should not risk trying to do so and refer the repair to a qualified service technician.

— IMPORTANT —
THIS PIONEER APPARATUS CONTAINS LASER OF CLASS 1.
SERVICING OPERATION OF THE APPARATUS SHOULD BE DONE BY A SPECIALLY INSTRUCTED PERSON.

— LASER DIODE CHARACTERISTICS —
MAXIMUM OUTPUT POWER: 5 mw
WAVELENGTH: 780-785 nm

LABEL CHECK



(Right side view)

— Additional Laser Caution —

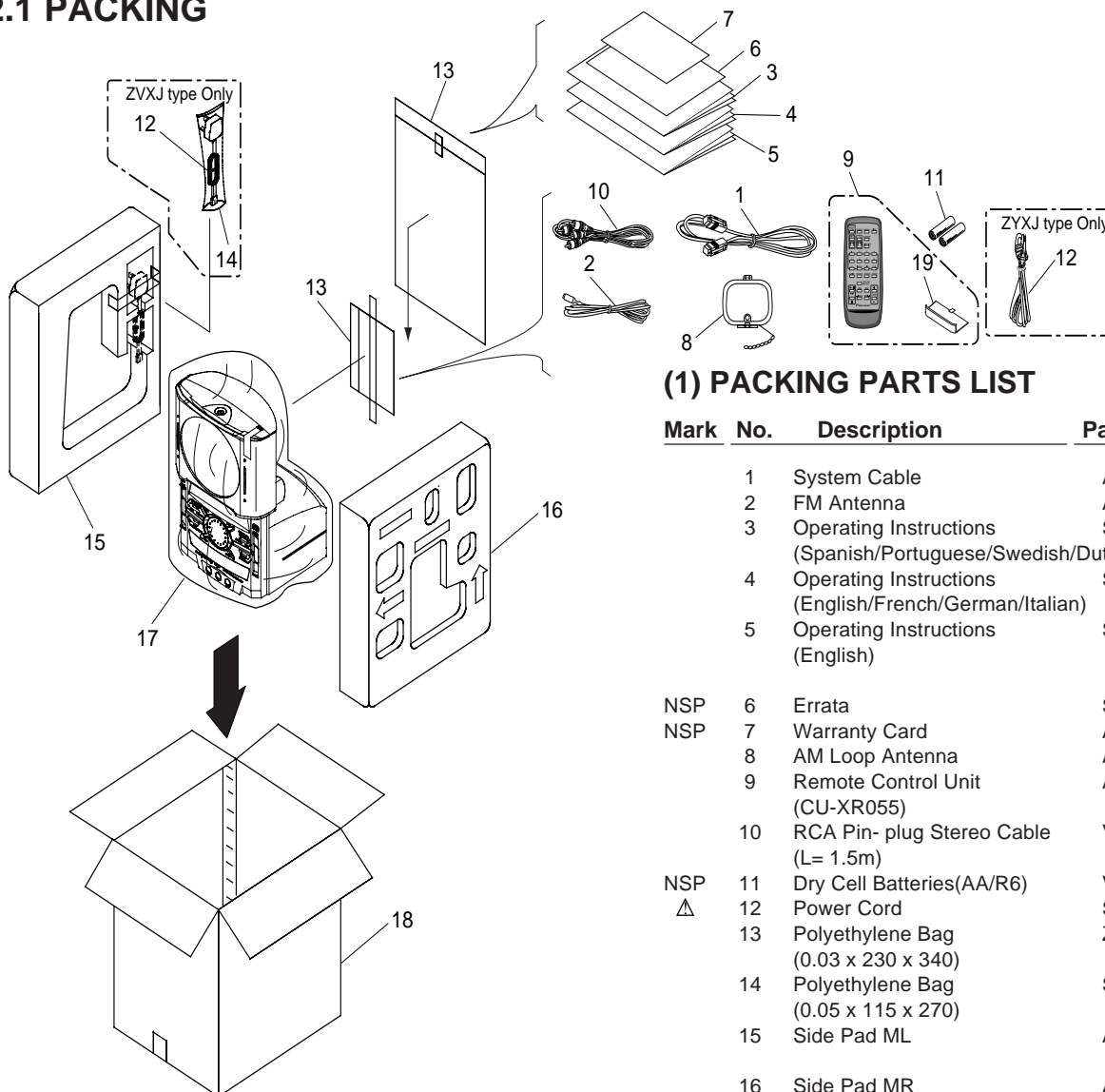
- Laser Interlock Mechanism**
The loading position detect switch (in CD mechanism assembly) is set to "CLMP ON(CD CLOSE)" (ON:low level,OFF:high level) position, the system control IC(IC5501) get the "CLMP" signal, and hand the laser "LDON" signal to IC1101.
Then a laser diode can be lighted except when the level of signal CLMP is low.
The interlock also does not function in the test mode*.
Laser diode oscillation will continue, if pin 1 of CXA1821M (IC1101) on the CDMAIN UNIT is connected to GND, or pin 19 is connected to low level (ON), or else the terminals of Q1101 are shorted to each other (fault condition).
- When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 1 laser beam.

* : Refer to page 65.

2. EXPLODED VIEWS and PARTS LIST

NOTES: ● Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.
 ● The Δ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
 ● Screws adjacent to \blacktriangledown mark on the product are used for disassembly.

2.1 PACKING



(1) PACKING PARTS LIST

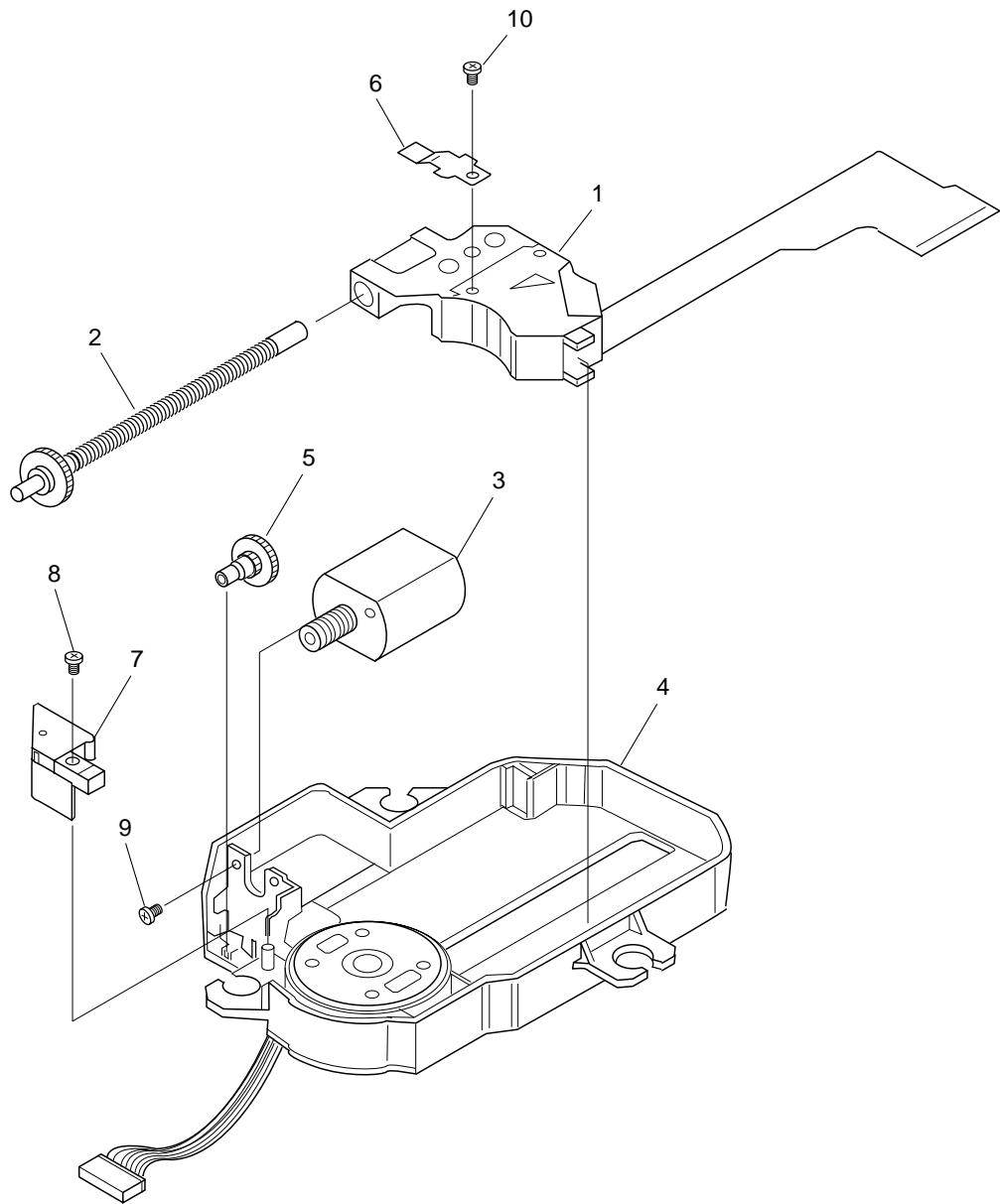
| Mark | No. | Description | Part No. |
|----------|-----|--|------------------------|
| | 1 | System Cable | ADE7039 |
| | 2 | FM Antenna | ADH7005 |
| | 3 | Operating Instructions (Spanish/Portuguese/Swedish/Dutch) | See Contrast table (2) |
| | 4 | Operating Instructions (English/French/German/Italian) | See Contrast table (2) |
| | 5 | Operating Instructions (English) | See Contrast table (2) |
| NSP | 6 | Errata | See Contrast table (2) |
| NSP | 7 | Warranty Card | ARY7022 |
| | 8 | AM Loop Antenna | ATB7007 |
| | 9 | Remote Control Unit (CU-XR055) | AXD7223 |
| | 10 | RCA Pin- plug Stereo Cable (L= 1.5m) | VDE1052 |
| NSP | 11 | Dry Cell Batteries(AA/R6) | VEM-013 |
| Δ | 12 | Power Cord | See Contrast table (2) |
| | 13 | Polyethylene Bag (0.03 x 230 x 340) | Z21-038 |
| | 14 | Polyethylene Bag (0.05 x 115 x 270) | See Contrast table (2) |
| | 15 | Side Pad ML | AHA7240 |
| | 16 | Side Pad MR | AHA7241 |
| | 17 | Packing Sheet | AHG7053 |
| | 18 | Packing Case | AHD7754 |
| | 19 | Battery Cover | AZA7331 |

(2) CONTRAST TABLE

XC-IS21MD/ZYXJ and ZVXJ are constructed the same except for the following:

| Mark | No. | Symbol and Description | Part No. | | Remarks |
|-----------------|-----|--|-----------|-----------|---------|
| | | | ZYXJ type | ZVXJ type | |
| NSP Δ | 3 | Operating Instructions (Spanish/Portuguese/Swedish/Dutch) | ARC7255 | Not used | |
| | 4 | Operating Instructions (English/French/German/Italian) | ARE7225 | Not used | |
| | 5 | Operating Instructions (English) | Not used | ARB7197 | |
| | 6 | Errata | ARX7027 | ARX7028 | |
| | 12 | Power Cord | XDG3001 | ADG1156 | |
| | 14 | Polyethylene Bag (0.05 x 115 x 270) | Not used | Z21-013 | |

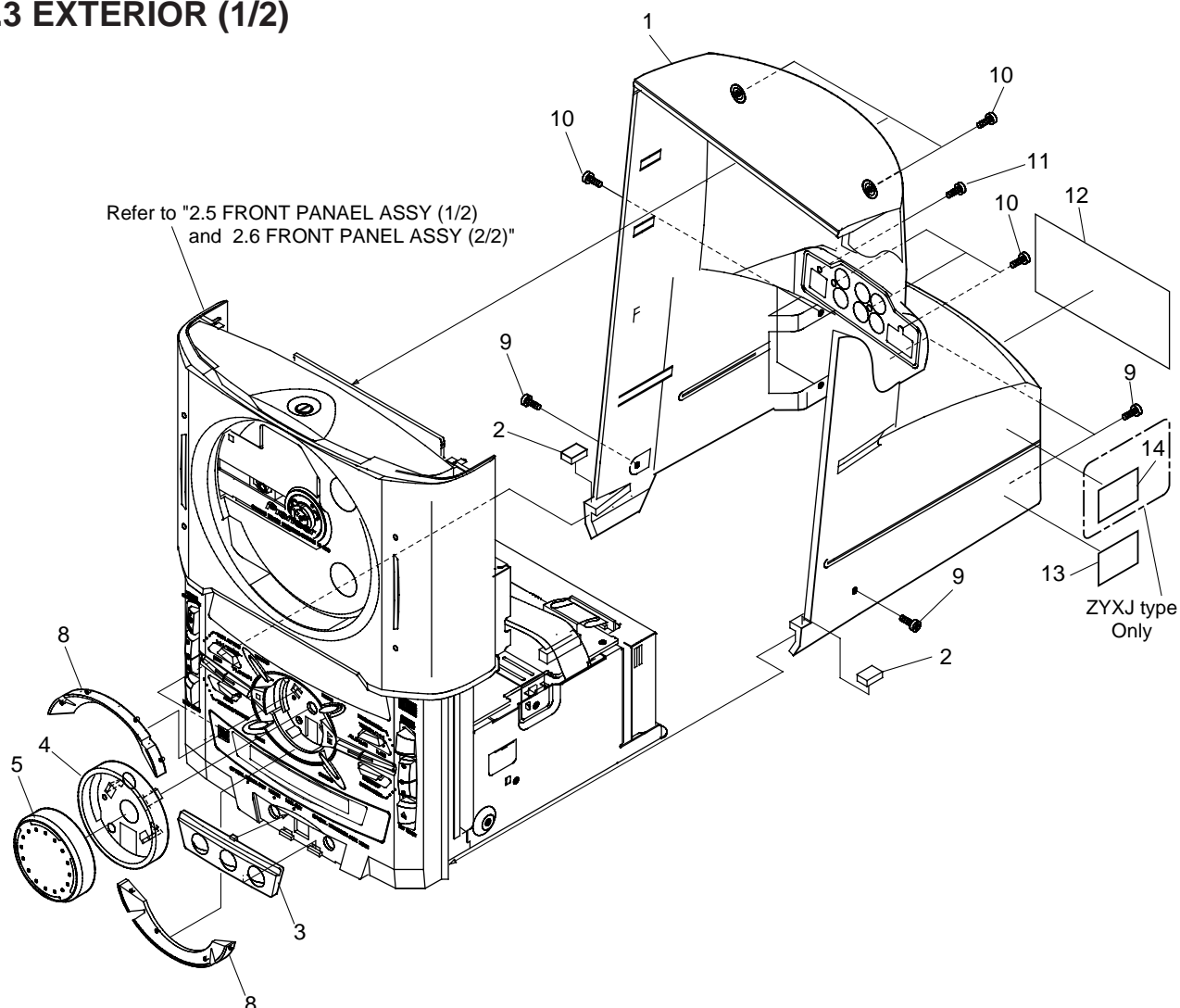
2.2 CD MECHANISM ASSY



● CD MECHANISM ASSY PARTS LIST

| Mark | No. | Description | Parts No. |
|------|-----|-----------------|----------------|
| | 1 | KSS-62A(RP) | 8-820-063-(03) |
| | 2 | Sled Screw Assy | X-2646-389-(1) |
| | 3 | Sled Motor Assy | A-4912-199-(A) |
| | 4 | MD Assy | X-2646-482-(1) |
| | 5 | Geer BN | 2-627-761-(02) |
| | 6 | Rack Spring | 2-646-912-(1) |
| | 7 | Holder | 2-648-913-(1) |
| | 8 | Tapping Screw | 2-646-352-01 |
| | 9 | Precision Screw | 2-627-668-01 |
| | 10 | Tapping Screw | 2-646-358-11 |

2.3 EXTERIOR (1/2)



(1) EXTERIOR (1/2) PARTS LIST

| Mark | No. | Description | Parts No. | Mark | No. | Description | Parts No. |
|------|-----|----------------|--------------|------|-----|---------------|------------------------|
| | 1 | Rear Cover | AMC7029 | | 11 | Screw | BMZ30P060FZK |
| | 2 | Cussion Rubber | AEB7154 | NSP | 12 | Name Label | See Contrast table (2) |
| | 3 | Jack Door | AAN7188 | | 13 | Caution Label | See Contrast table (2) |
| | 4 | Jog Lens | AAK7651 | | 14 | Caution Label | See Contrast table (2) |
| | 5 | Jog Knob | AAA7005 | | | | |
| | 6 | | | | | | |
| | 7 | | | | | | |
| | 8 | Jog Escutcheon | AAK7620 | | | | |
| | 9 | Screw | BBZ30P080FMC | | | | |
| | 10 | Screw | VPZ30P100FMC | | | | |

(2) CONTRAST TABLE

XC-IS21MD/ZYXJ and ZVXJ are constructed the same except for the following:

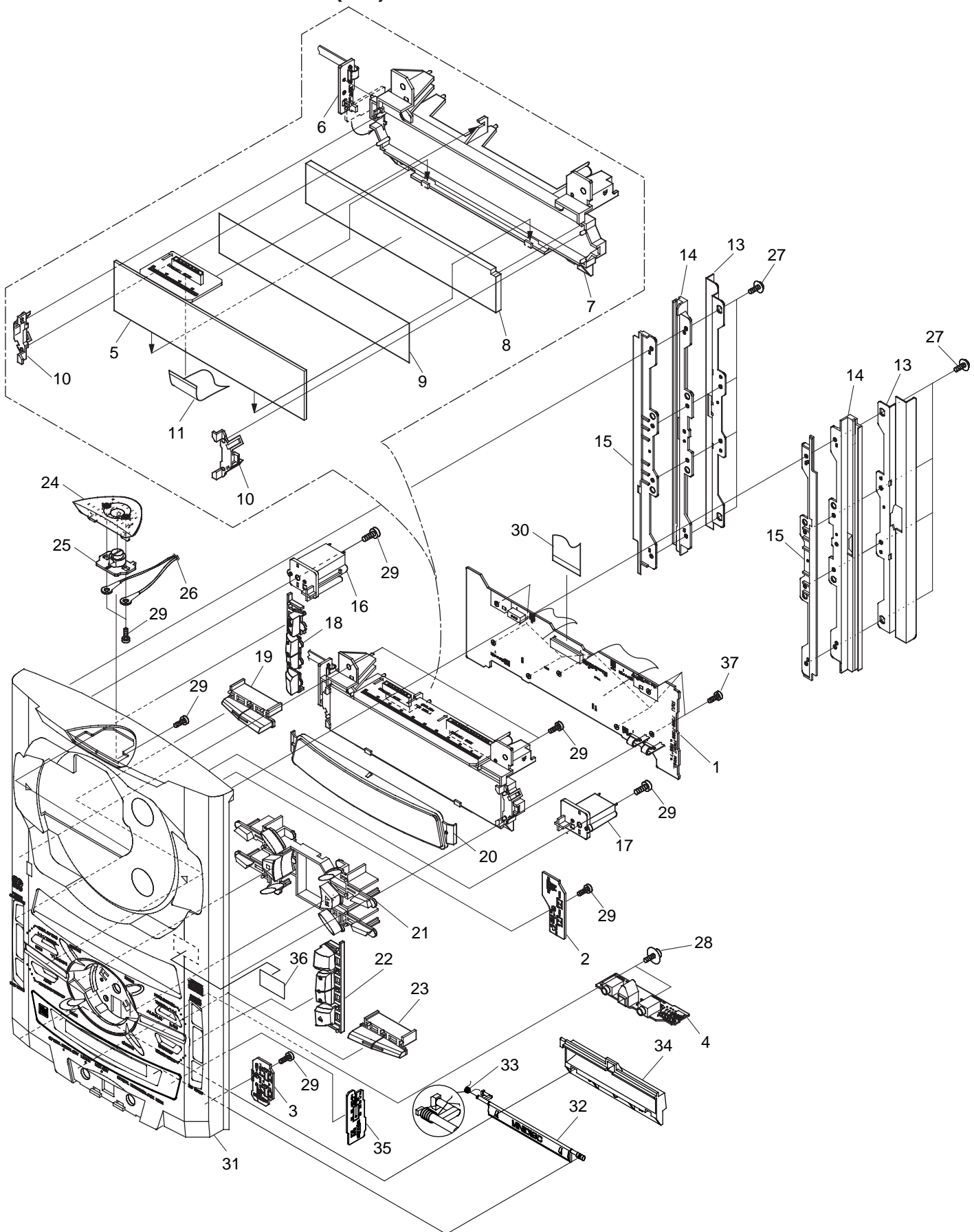
| Mark | No. | Symbol and Description | Part No. | | Remarks |
|------|-----|------------------------|-----------|-----------|---------|
| | | | ZYXJ type | ZVXJ type | |
| NSP | 12 | Name Label | AAL7232 | AAL7233 | |
| | 13 | Coution Label | PRW1233 | PRW1018 | |
| | 14 | Coution Label | VRW1094 | Not used | |



● EXTERIOR (2/2) PARTS LIST

| Mark | No. | Description | Parts No. |
|------|-----|---------------------|--------------|
| | 1 | U- COM ASSY | AWU7329 |
| | 2 | MD ASSY | AWU7335 |
| | 3 | AF ASSY | AWU7300 |
| NSP | 4 | R- TERMINAL ASSY | AWU7316 |
| | 5 | FM/AM TUNER MODULE | AXQ7068 |
| | 6 | •••••••• | |
| | 7 | •••••••• | |
| NSP | 8 | Chassis M | ANA7087 |
| | 9 | Rear Panel | ANC7735 |
| NSP | 10 | Shield Plate | ANK7059 |
| | 11 | Shield Case T | ANK7050 |
| | 12 | Shield Case B | ANK7051 |
| | 13 | Earth Plate | XNG3015 |
| | 14 | Ceramic Capacitor | CKPUYB102K50 |
| | 15 | PC Support | DEC1932 |
| NSP | 16 | Spacer | AEB7092 |
| | 17 | Rubber Sheet | AEB1111 |
| | 18 | Leg Assy IS | AEC7202 |
| | 19 | Locking Card Spacer | VEC1596 |
| NSP | 20 | PCB Spacer (3 x 6) | AEC7156 |
| | 21 | Screw | BBZ30P080FMC |
| | 22 | Screw | VPZ30P080FZK |
| | 23 | Connector Assy 3p | ADX7252 |
| | 24 | 23P F.F.C /30V | ADD7150 |
| NSP | 25 | TX CONNECT ASSY | AWU7323 |
| | 26 | 30P F.F.C /30V | ADD7135 |
| | 27 | Float Rubber | REB1328 |
| NSP | 28 | Sub Chassis MD | ANA7088 |
| | 29 | Shield Cover MD | ANK7053 |
| NSP | 30 | MD Mechanism assy | RXA1777 |
| | 31 | Float Screw | RBA1133 |
| | 32 | Supporting Mold | AZN7799 |
| | 33 | Screw | ABA7054 |

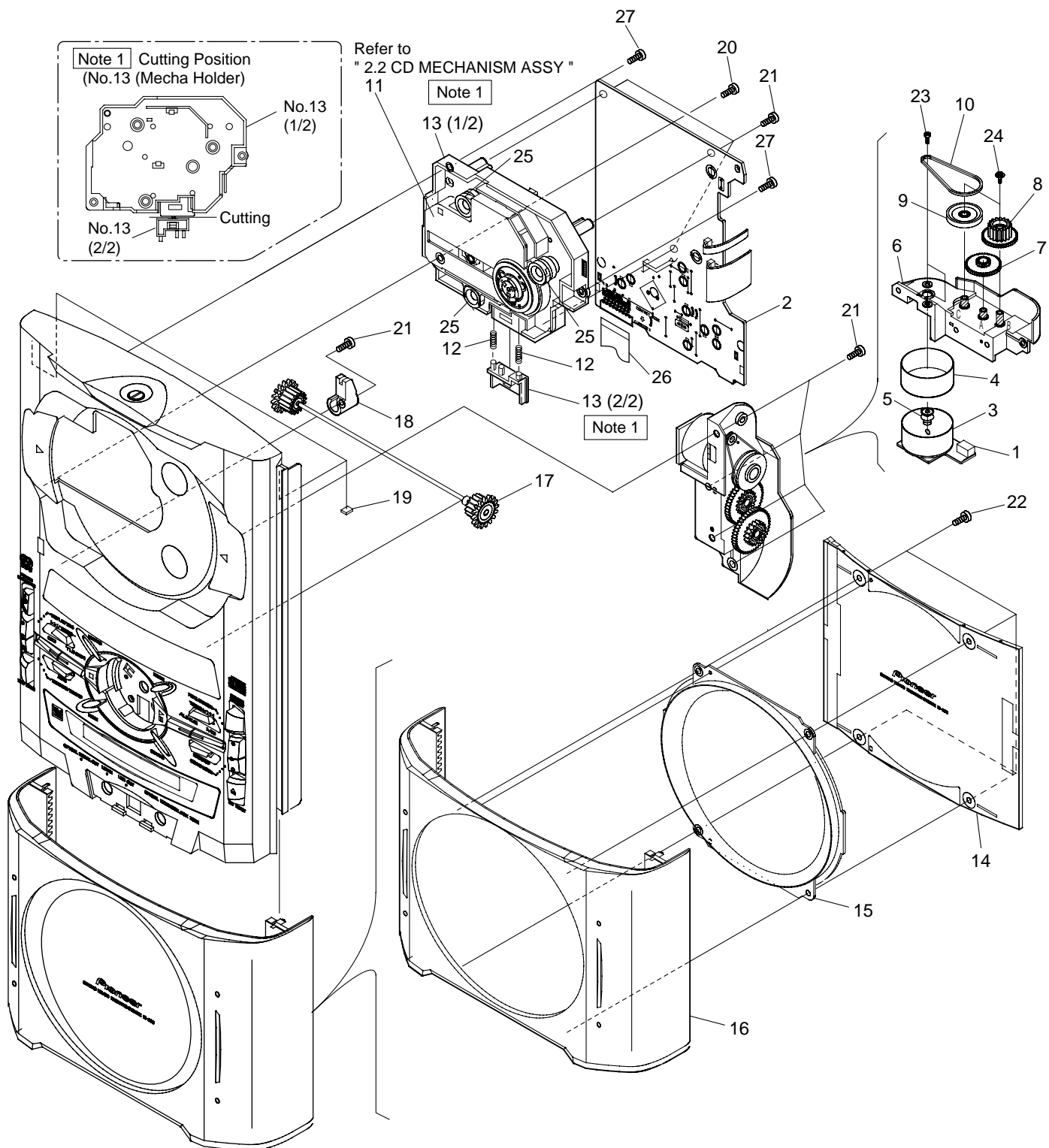
2.5 FRONT PANEL ASSY (1/2)



● FRONT PANEL ASSY (1/2) PARTS LIST

| Mark | No. | Description | Parts No. |
|------|-----|---------------------|--------------|
| | 1 | FRONT PANEL ASSY | AWU7309 |
| NSP | 2 | CD CLOSE SW ASSY | AWU7320 |
| NSP | 3 | CO OPEN SW ASSY | AWU7319 |
| NSP | 4 | F- TERMINAL ASSY | AWU7312 |
| NSP | 5 | LCD ASSY (MD) | AWU7355 |
| NSP | 6 | LIGHT- L ASSY | AWU7321 |
| | 7 | Lens Holder | AMR7247 |
| | 8 | Lens M | AAK7615 |
| | 9 | Diffusion Sheet | AAK7666 |
| | 10 | Reflector | AMR7248 |
| | 11 | 13P F.F.C/ 30V | ADD7149 |
| | 12 | •••••••• | |
| | 13 | Frame | ANG7235 |
| | 14 | Rail | AMR7239 |
| | 15 | Blind | AMR7261 |
| | 16 | PCB Holder L | AMR7262 |
| | 17 | PCB Holder R | AMR7263 |
| | 18 | Plating Button Assy | AXG7077 |
| | 19 | Fuction Button B | AAD7511 |
| | 20 | Window | AAK7621 |
| | 21 | Complex Button | AAD7532 |
| | 22 | Plating Button A | AAD7507 |
| | 23 | Function Button A | AAD7510 |
| | 24 | O/C Button | AAD7506 |
| | 25 | Key O/C | AAD7526 |
| | 26 | Connector 3p | ADX7252 |
| | 27 | Screw | IPZ30P100FMC |
| | 28 | Screw | ABA1005 |
| | 29 | Screw | VPZ30P080FZK |
| | 30 | 17P F.F.C/ 30V | ADD7145 |
| | 31 | Front Panel M | AXG7076 |
| | 32 | MD Flap | AAN7190 |
| | 33 | MD Spring | ABH7154 |
| | 34 | MD Flap Holder | AMR7236 |
| NSP | 35 | MD FLAP SW ASSY | AWU7324 |
| | 36 | PU Caution Label | ARW7059 |
| | 37 | Screw | VPZ30P100FMC |

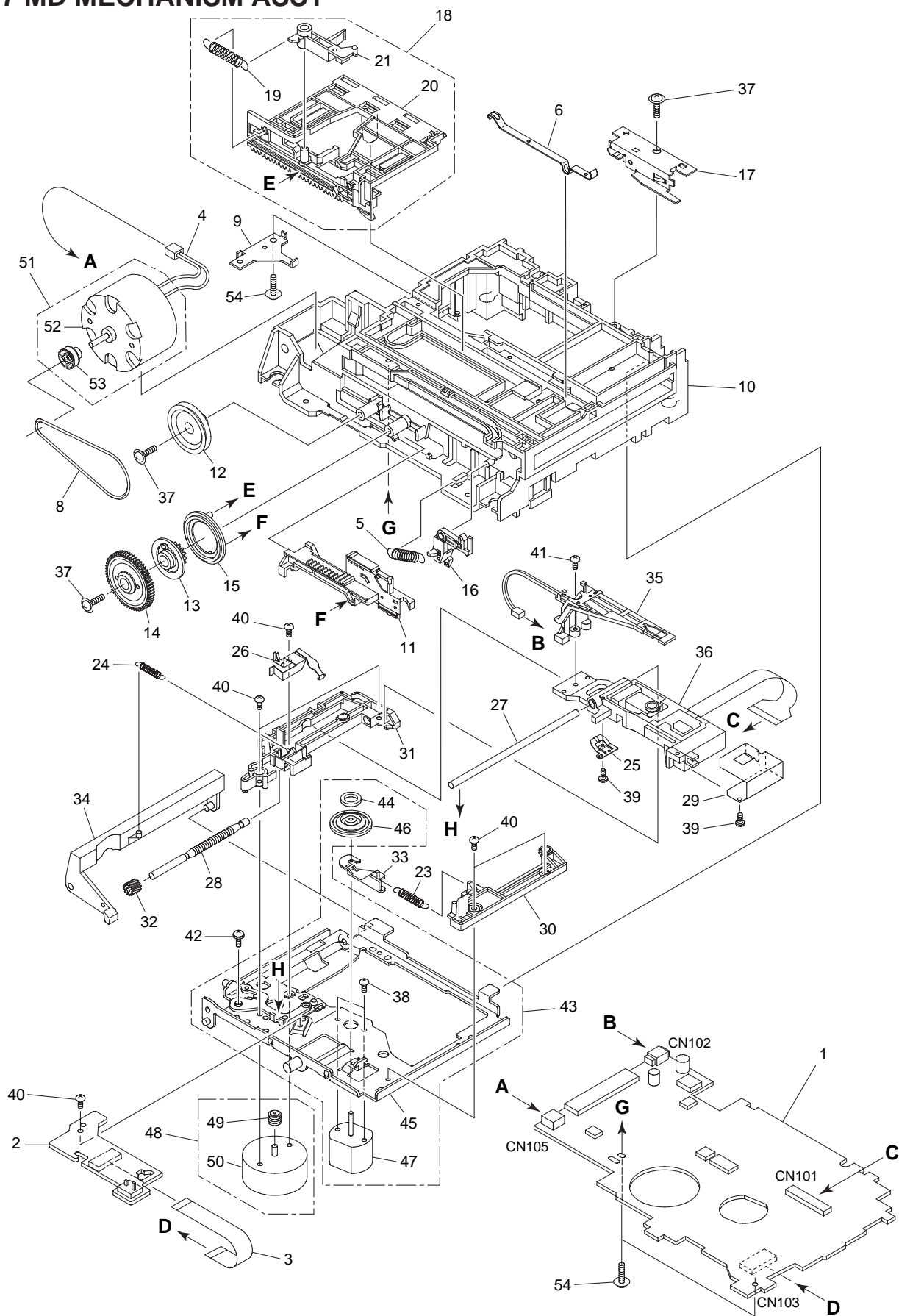
2.6 FRONT PANEL ASSY (2/2)



● FRONT PANEL ASSY (2/2) PARTS LIST

| Mark | No. | Description | Parts No. |
|------|-----|--------------------|--------------|
| NSP | 1 | CD MOTOR ASSY | AWU7318 |
| | 2 | CD ASSY | AWU7306 |
| | 3 | Slider Motor | VXM1033 |
| | 4 | Motor Shield | ANK7067 |
| | 5 | Motor Pulley | PNW1634 |
| | 6 | Gear Holder | AMR7240 |
| | 7 | Gear A | ANW7063 |
| | 8 | Gear B | AMR7260 |
| | 9 | Gear Pulley A | ANW7066 |
| | 10 | Belt | AEB7171 |
| | 11 | CD MECHANISM ASSY | KSM-620AAA |
| | 12 | Float Spring | ABH7170 |
| | 13 | Mechanism Holder | AMR7242 |
| | 14 | CD Door Window | AAK7673 |
| | 15 | CD Door Escutcheon | AAK7619 |
| | 16 | CD Door | AAN7189 |
| | 17 | Shaft Assy | AXG7078 |
| | 18 | Shaft Holder | AMR7237 |
| | 19 | Cussion Rubber | AEB7154 |
| | 20 | Screw | BBZ30P080FMC |
| | 21 | Screw | VPZ30P080FZK |
| | 22 | Screw | ABA7054 |
| | 23 | Screw | PMZ26P040FMC |
| | 24 | Screw | IPZ20P080FMC |
| | 25 | Float Rubber | AEB7129 |
| | 26 | 17P F.F.C/ 30V | ADD7146 |
| | 27 | Screw | VPZ30P100FMC |

2.7 MD MECHANISM ASSY



● MD MECHANISM ASSY PARTS LIST

| Mark | No. | Description | Part No. | Mark | No. | Description | Part No. |
|------|-----|---------------------|----------|------|-----|---------------------|--------------|
| NSP | 1 | CORE MAIN UNIT ASSY | RWZ4334 | | 31 | S. Holder | RNK2307 |
| | 2 | CORE SW UNIT ASSY | RWZ4335 | | 32 | Worm Wheel | RNK2309 |
| | 3 | Lead Card 7P | RDD1403 | | 33 | Hook | RNK2310 |
| | 4 | Lead Wire | RKP1814 | | 34 | Head Lifter | RNK2311 |
| | 5 | Lever Spring | RBH1463 | | 35 | MD Head | RPB1063 |
| | 6 | Clamp Spring 1 | RBK1074 | | 36 | MD Pick-up | RWY1019 |
| | 7 | ***** | | | 37 | Screw | Z39-019 |
| | 8 | Loading Belt | REB1329 | | 38 | Screw | JFZ17P020FZK |
| | 9 | Lock Plate | RNE1949 | | 39 | Screw | JGZ14P020FMC |
| | 10 | Loading Base | RNK2323 | | 40 | Screw | JGZ17P028FMC |
| NSP | 11 | Under Slider | RNK2314 | | 41 | Screw | JGZ17P040FMC |
| | 12 | Gear Pulley | RNK2316 | | 42 | Screw | PMB20P040FMC |
| | 13 | Drive Gear | RNK2317 | | 43 | Servo Base Assy | REA1283 |
| | 14 | Clutch Gear | RNK2318 | NSP | 44 | Clamp Magnet | RMF1002 |
| | 15 | Flip Disk | RNK2319 | NSP | 45 | Servo Base | RNE1951 |
| | 16 | SW Lever | RNK2320 | NSP | 46 | Disc Table | RNK2305 |
| | 17 | Shutter Assy | RXA1774 | NSP | 47 | Spindle Motor | RXM1091 |
| | 18 | Upper Slider Assy | RXA1782 | | 48 | Carriage Motor Assy | REA1284 |
| | 19 | Eject Spring | RBH1461 | | 49 | Worm | RNK2308 |
| | 20 | Upper Slider | RNK2324 | NSP | 50 | Carriage Motor | RXM1090 |
| NSP | 21 | Carrier | RNK2315 | | 51 | Loading Motor Assy | REA1290 |
| | 22 | ***** | | | 52 | DC Motor /0.75W | PXM1010 |
| | 23 | Spindle Spring | RBH1460 | | 53 | CA Pulley | RNK2322 |
| | 24 | Lifter Spring | RBH1462 | | 54 | Screw | BPZ20P080FMC |
| | 25 | Screw Guide | RBK1072 | | | | |
| | 26 | S. H. Spring | RBK1073 | | | | |
| | 27 | Guide Shaft | RLA1312 | | | | |
| | 28 | Lead Screw | RLA1311 | | | | |
| | 29 | Shield Case | RNE1950 | | | | |
| | 30 | Reference Plate | RNK2306 | | | | |

3. BLOCK DIAGRAM and SCHEMATIC DIAGRAM

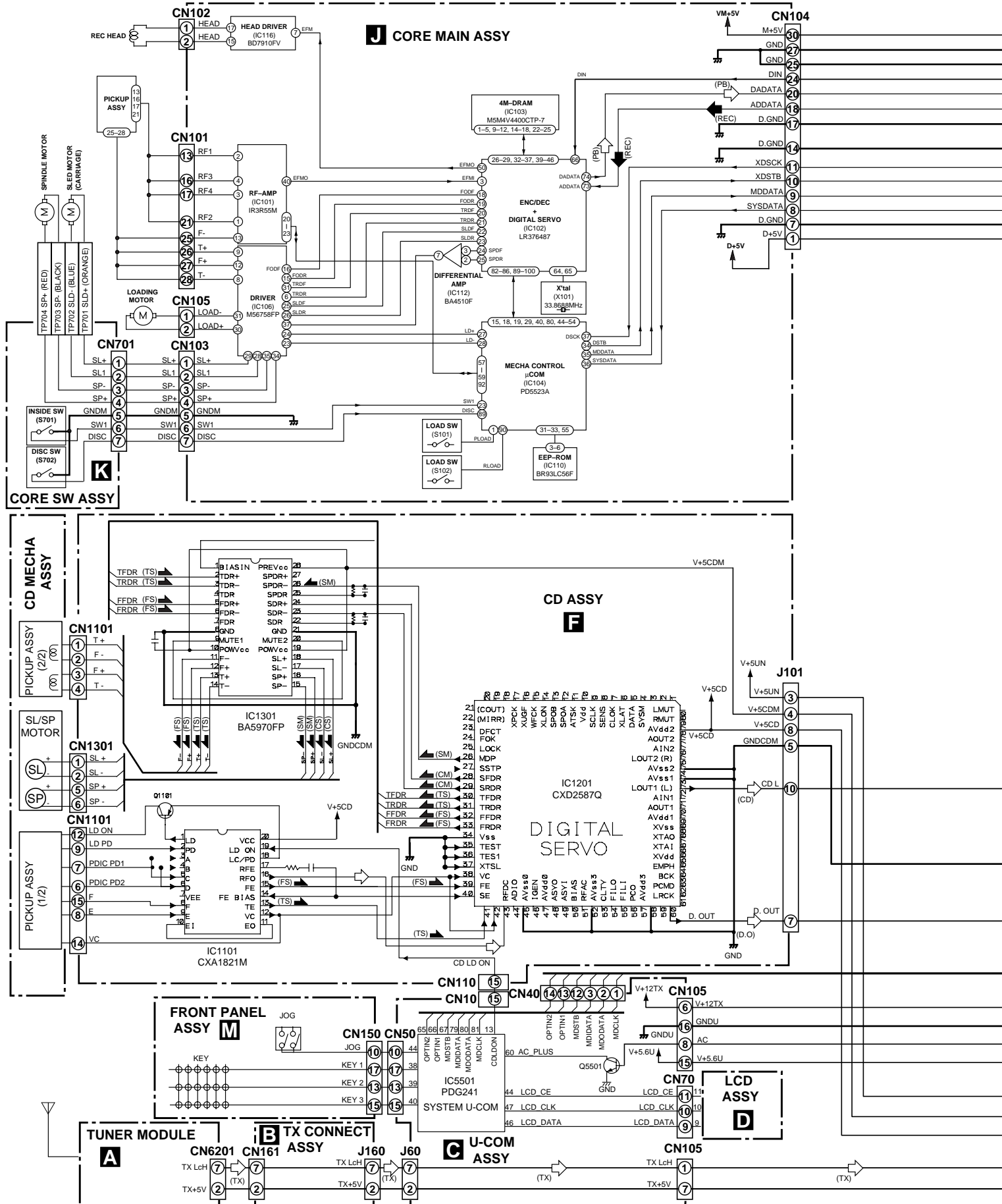
3.1 BLOCK DIAGRAM

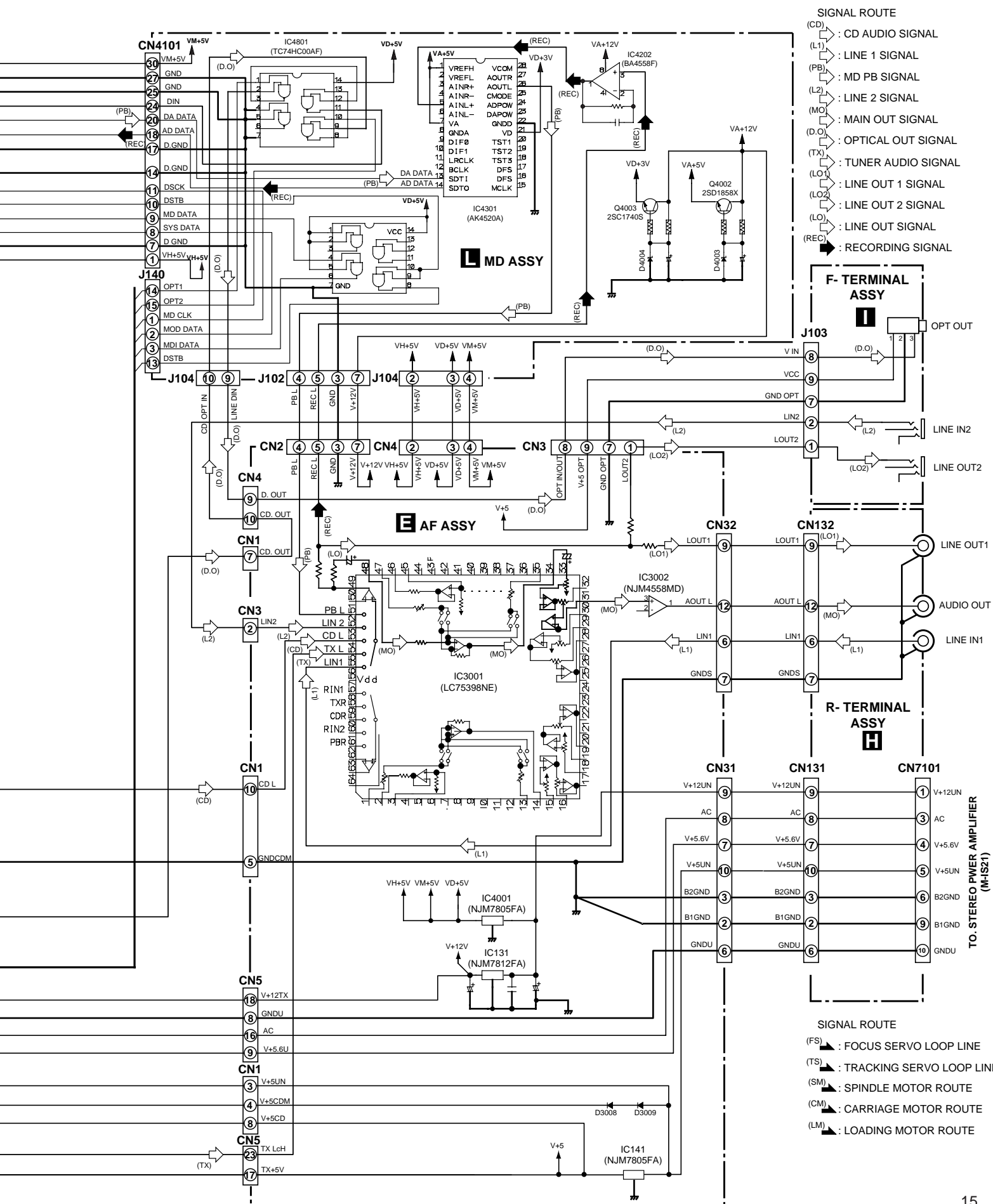
A

B

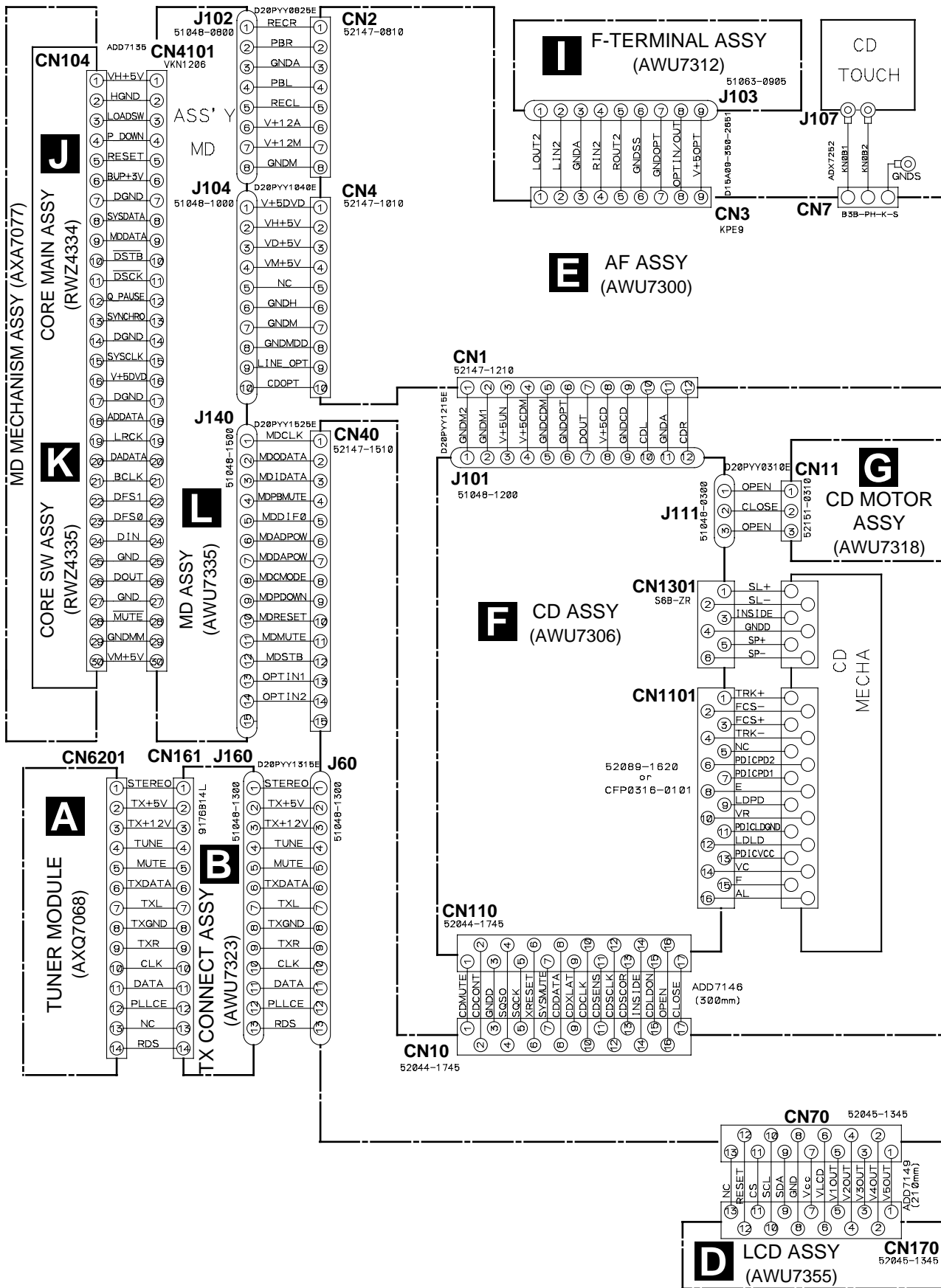
C

D

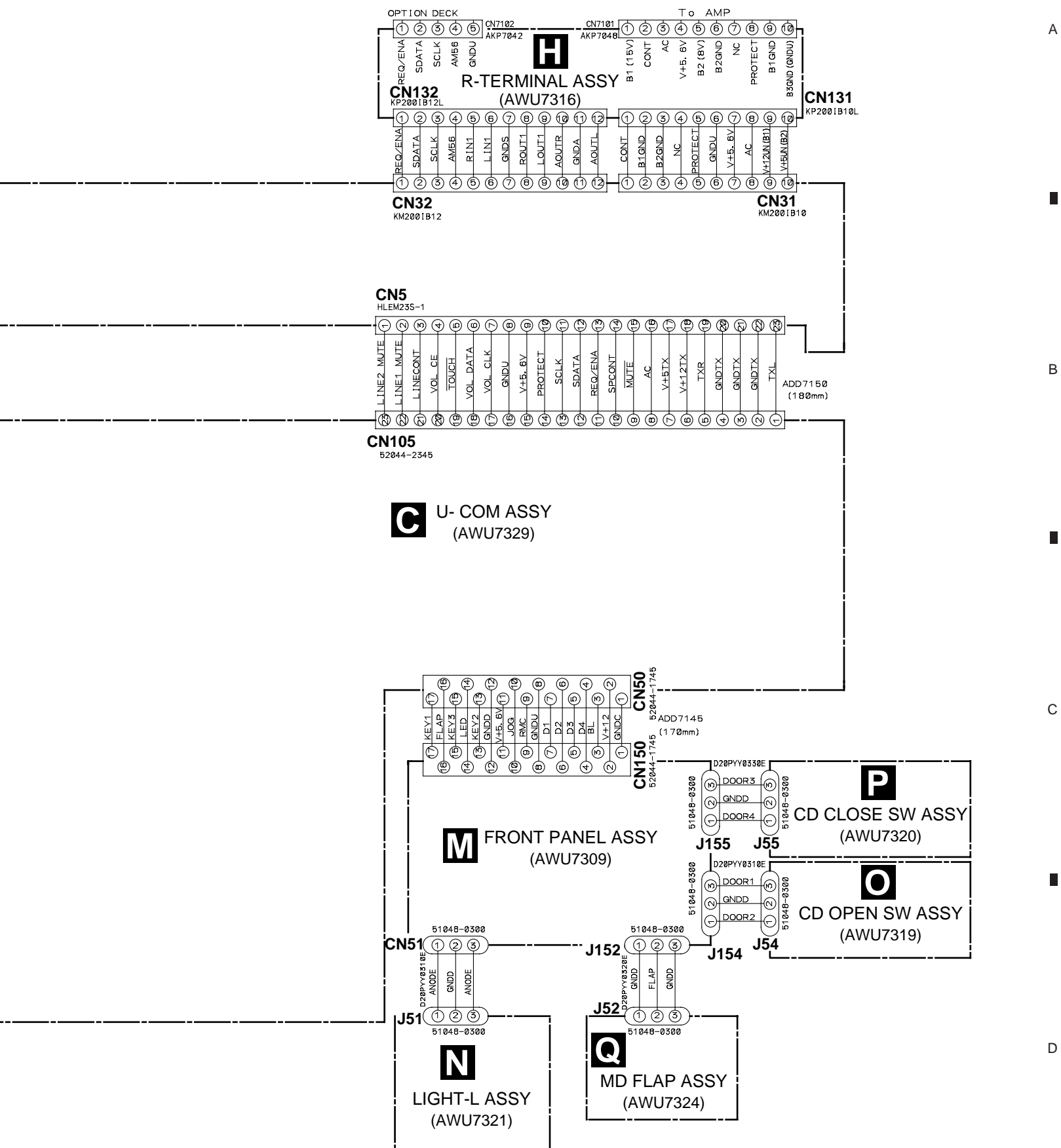




3.2 OVERALL CONNECTION DIAGRAM



Note : When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".



1. RESISTORS

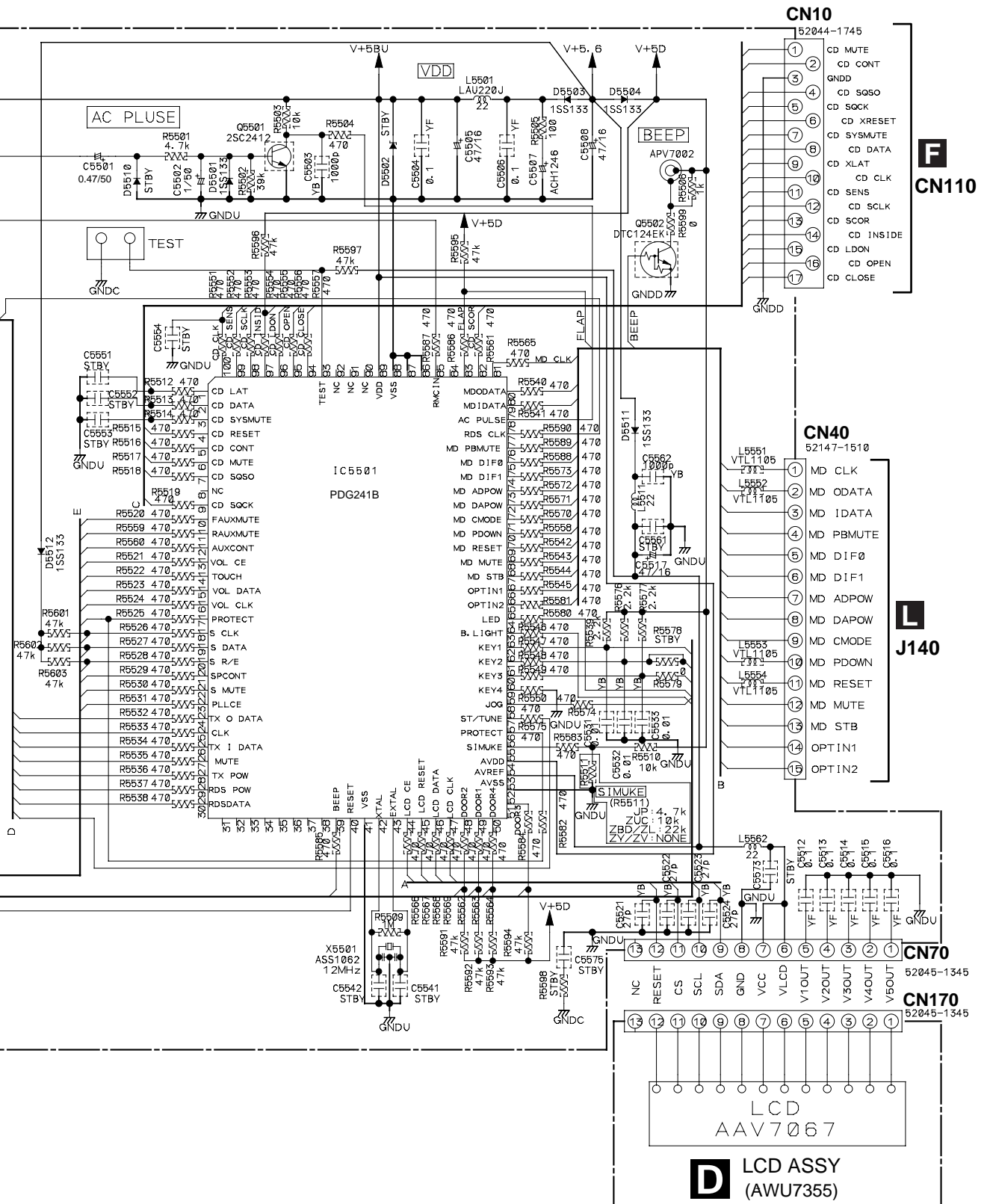
CAPACITORS

Indicated in Capacity (μ F)/VOLTAGE (V) unless otherwise noted P:PF.

3. DIODES

No mark diode is 1SS254.





XC-IS21MD

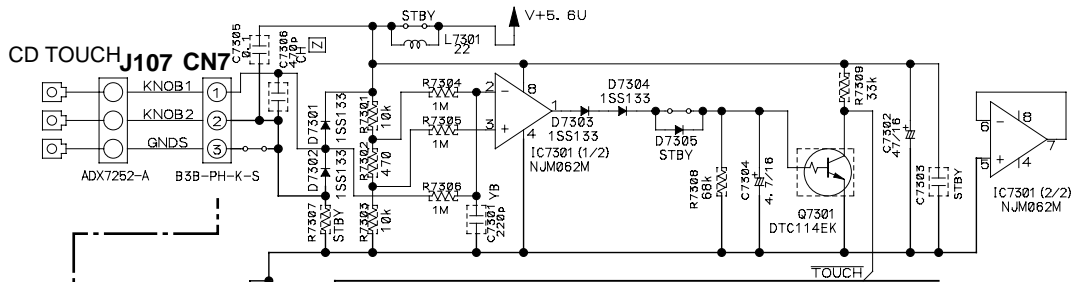
3.5 AF ASSY

A

B

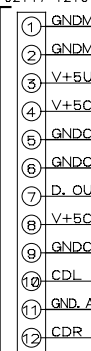
C

D



E AF ASSY (AWU7300)

CN1
52147-1210

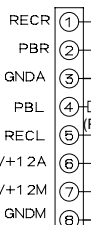


F J101

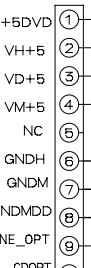
L J102

L J104

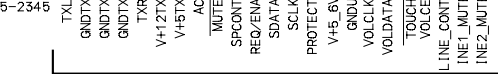
CN2
52147-0810



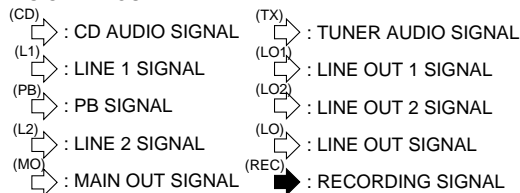
CN4
52147-1010



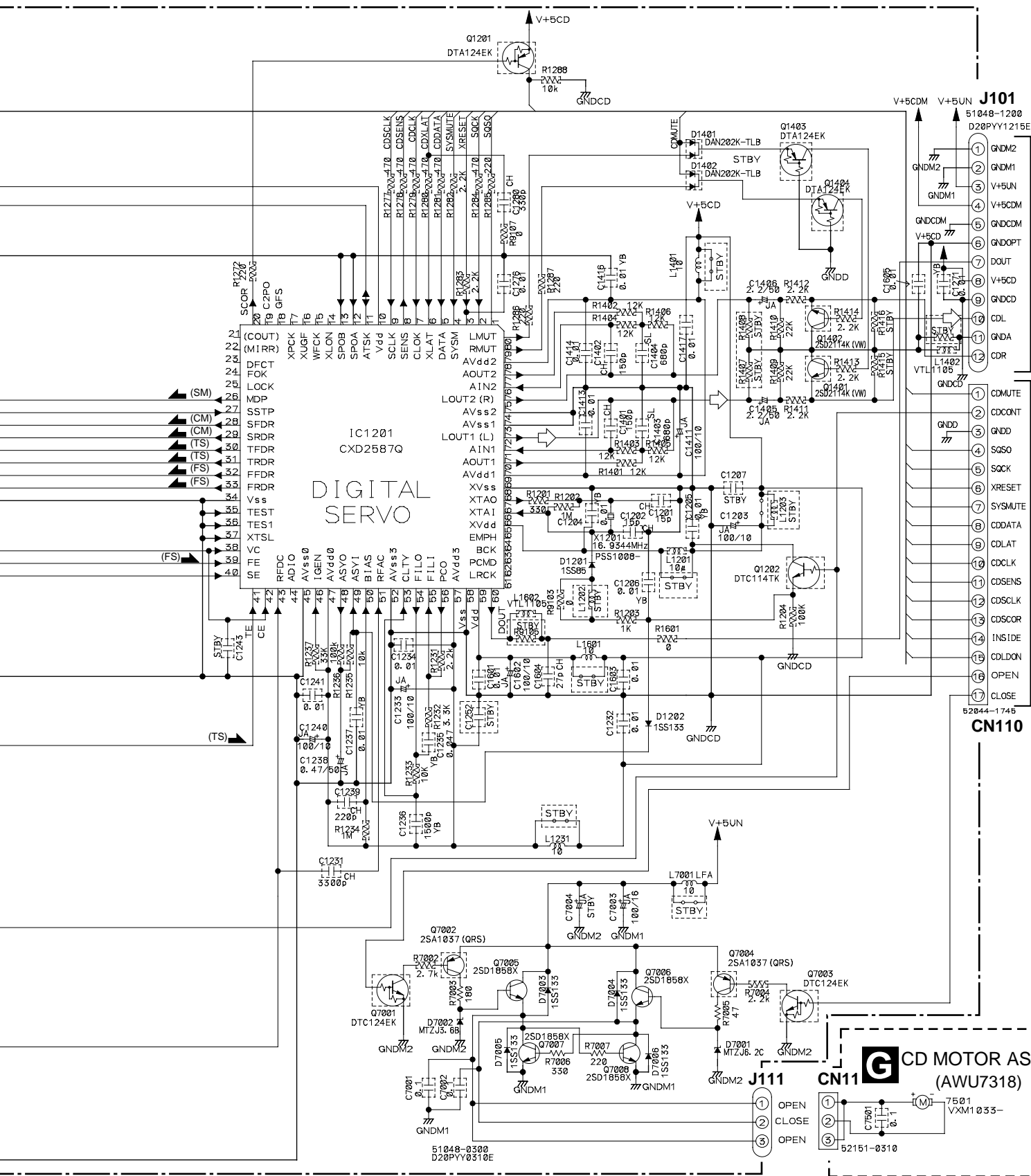
CN5
52045-2345



SIGNAL ROUTE







E CN1

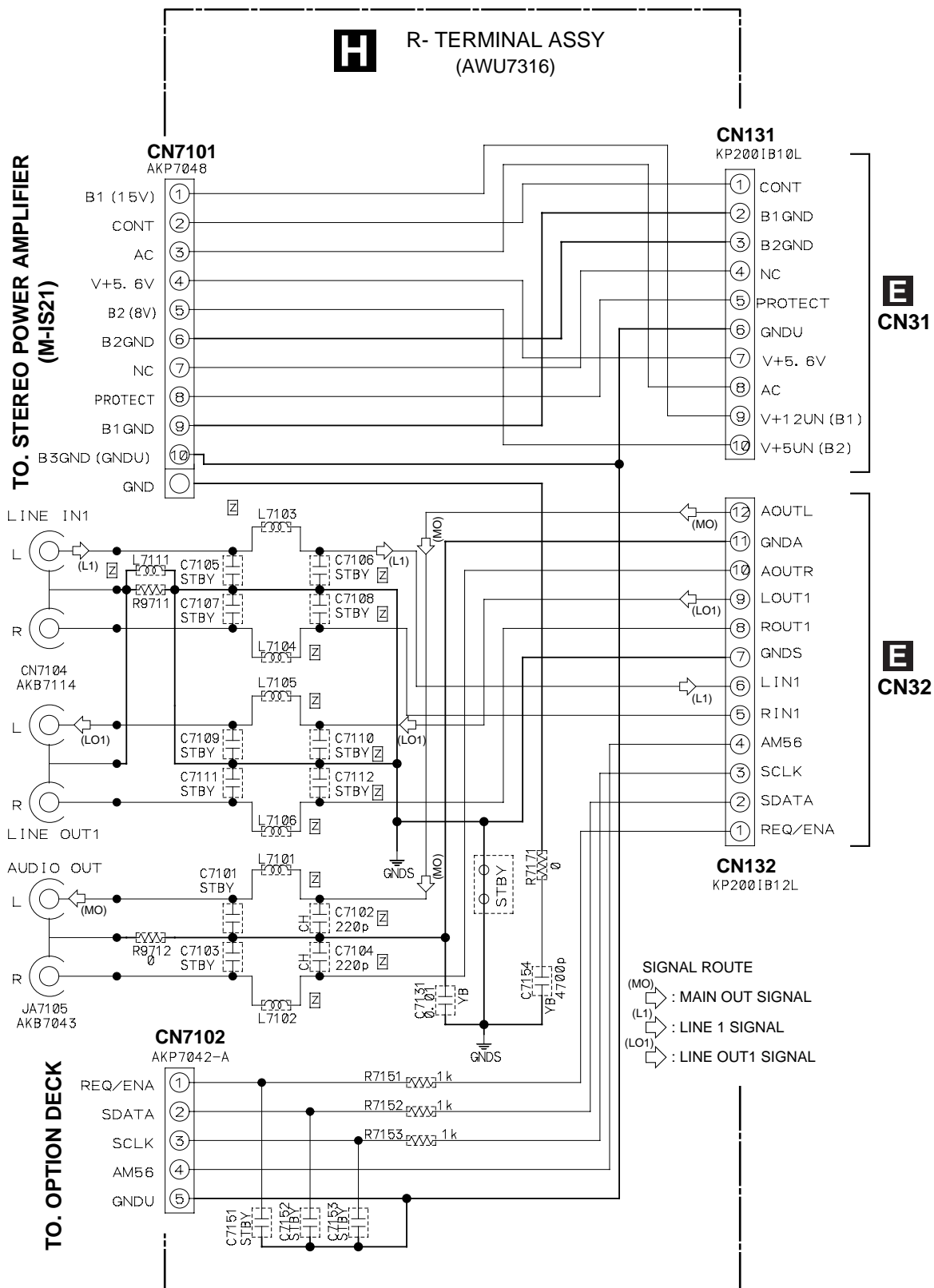
C CN10

CN110

G CD MOTOR ASSY (AWU7318)



CN11

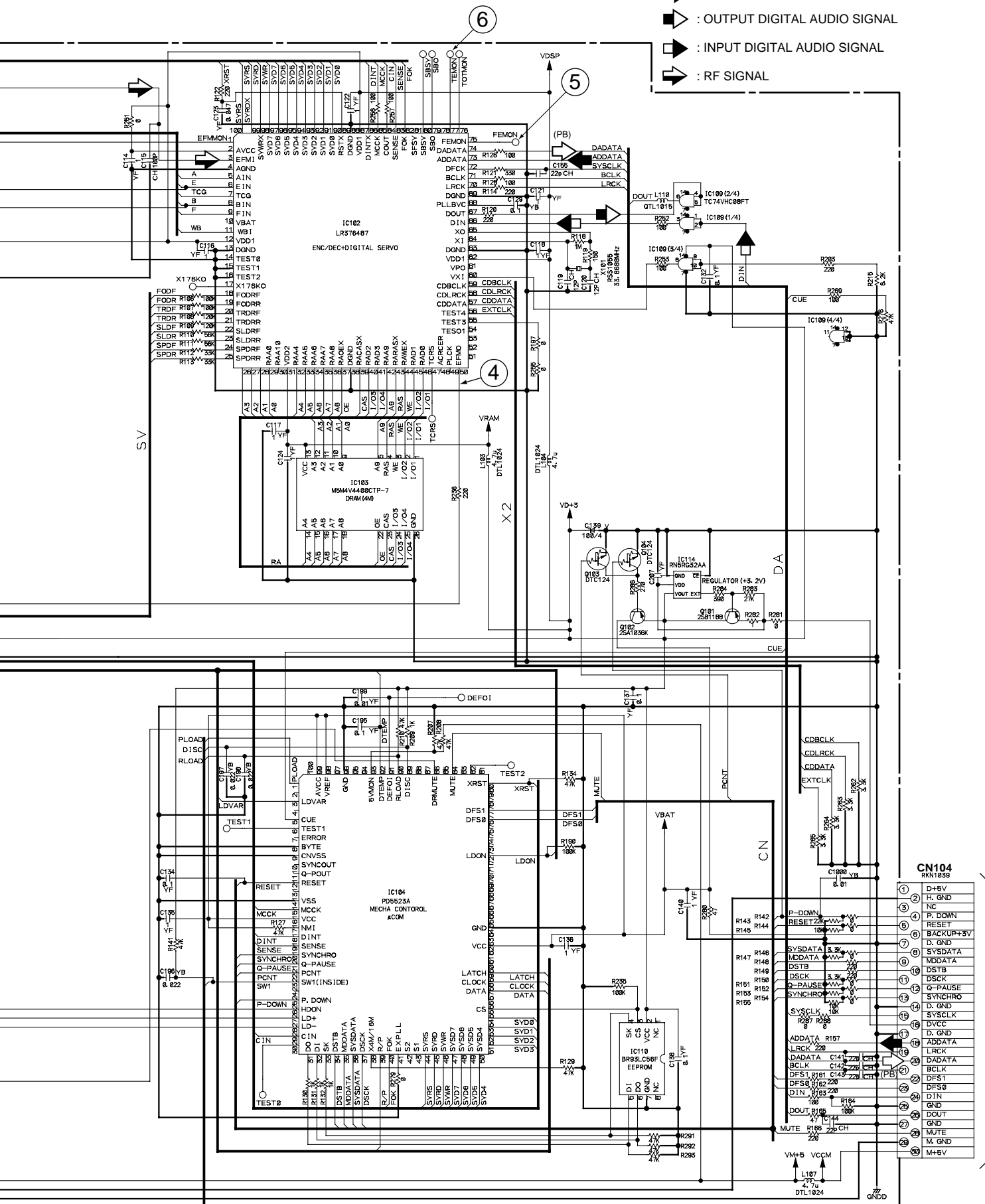
3.7 REAR and FRONT ASSYS





XC-IS21MD

-  : MD PLAYBACK SIGNAL
 : REC SIGNAL
 : OUTPUT DIGITAL AUDIO SIGNAL
 : INPUT DIGITAL AUDIO SIGNAL
 : RF SIGNAL



A

B

C

D

L
CN4101

■ Voltages

J MD CORE MAIN ASSY

| IC101 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 0.78V |
| 2 | 0.73V |
| 3 | 0.77V |
| 4 | 0.75V |
| 5 | 1.61V |
| 6 | 1.61V |
| 7 | 0.75V |
| 8 | 1.61V |
| 9 | 1.61V |
| 10 | 1.61V |
| 11 | 1.61V |
| 12 | 1.61V |
| 13 | 3.19V |
| 14 | 3.19V |
| 15 | 0V |
| 16 | 0V |
| 17 | 3.19V |
| 18 | 0V |
| 19 | 0V |
| 20 | 1.5V |
| 21 | 3.2V |
| 22 | 0V |
| 23 | 0V |
| 24 | 3.19V |
| 25 | 2.0V |
| 26 | 0V |
| 27 | 1.40V |
| 28 | 1.42V |
| 29 | 1.40V |
| 30 | 1.63V |
| 31 | 1.61V |
| 32 | 1.61V |
| 33 | 0V |
| 34 | 0V |
| 35 | 0V |
| 36 | 1.62V |
| 37 | 0.59V |
| 38 | 1.61V |
| 39 | 1.61V |
| 40 | 1.61V |
| 41 | 1.61V |
| 42 | 3.19V |
| 43 | 0V |
| 44 | 1.08V |
| 45 | 1.61V |
| 46 | 1.61V |
| 47 | 0V |
| 48 | 0.74V |

| IC102 | | | |
|---------|---------|---------|---------|
| PIN NO. | VOLTAGE | PIN NO. | VOLTAGE |
| 1 | 1.53V | 51 | 1.59V |
| 2 | 3.18V | 52 | 0V |
| 3 | 1.65V | 53 | 0V |
| 4 | 0V | 54 | 1.59V |
| 5 | 1.42V | 55 | 1.8V |
| 6 | 0V | 56 | 0V |
| 7 | 1.59V | 57 | 0V |
| 8 | 1.41V | 58 | 0V |
| 9 | 1.97V | 59 | 0V |
| 10 | 1.39V | 60 | 0V |
| 11 | 1.64V | 61 | 0.56V |
| 12 | 3.18V | 62 | 3.18V |
| 13 | 0V | 63 | 0V |
| 14 | 0V | 64 | 1.5V |
| 15 | 0V | 65 | 1.5V |
| 16 | 0V | 66 | 3.2V |
| 17 | 1.69V | 67 | 1.6V |
| 18 | 1.52V | 68 | 3.2V |
| 19 | 1.70V | 69 | 0V |
| 20 | 1.47V | 70 | 1.6V |
| 21 | 1.47V | 71 | 1.6V |
| 22 | 1.65V | 72 | 1.48V |
| 23 | 1.54V | 73 | 0V |
| 24 | 1.69V | 74 | 0V |
| 25 | 1.51V | 75 | 1.68V |
| 26 | 0.82V | 76 | 1.82V |
| 27 | 2.0V | 77 | 1.59V |
| 28 | 2.0V | 78 | 0.35V |
| 29 | 1.81V | 79 | 0.02V |
| 30 | 1.4V | 80 | 3.2V |
| 31 | 0.82V | 81 | 3.2V |
| 32 | 1.67V | 82 | 0.02V |
| 33 | 1.67V | 83 | 0.03V |
| 34 | 1.67V | 84 | 1.9V |
| 35 | 2.86V | 85 | 1.56V |
| 36 | 1.32V | 86 | 3.1V |
| 37 | 2.23V | 87 | 3.2V |
| 38 | 0V | 88 | 0V |
| 39 | 2.4V | 89 | 3.19V |
| 40 | 1.2V | 90 | 0.5V |
| 41 | 1.5V | 91 | 0.5V |
| 42 | 0V | 92 | 0.5V |
| 43 | 2.0V | 93 | 0.5V |
| 44 | 3.0V | 94 | 0.9V |
| 45 | 1.2V | 95 | 0.5V |
| 46 | 1.2V | 96 | 0.5V |
| 47 | 0.02V | 97 | 0.5V |
| 48 | 3.04V | 98 | 0.8V |
| 49 | 1.57V | 99 | 3.18V |
| 50 | 0.05V | 100 | 0.06V |

| IC103 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 1.2V |
| 2 | 1.2V |
| 3 | 3.0V |
| 4 | 2.0V |
| 5 | 0V |
| 9 | 2.23V |
| 10 | 1.32V |
| 11 | 2.86V |
| 12 | 1.67V |
| 13 | 3.18V |
| 14 | 1.67V |
| 15 | 1.67V |
| 16 | 1.67V |
| 17 | 2.86V |
| 18 | 1.32V |
| 22 | 2.23V |
| 23 | 2.4V |
| 24 | 1.2V |
| 25 | 1.5V |
| 26 | 0V |

| IC104 | | | |
|---------|---------|---------|---------|
| PIN NO. | VOLTAGE | PIN NO. | VOLTAGE |
| 1 | 0V | 51 | 0.54V |
| 2 | 0V | 52 | 0.6V |
| 3 | 0.22V | 53 | 0.6V |
| 4 | 0.03V | 54 | 0.6V |
| 5 | 1.29V | 55 | 0V |
| 6 | 2.21V | 56 | 0V |
| 7 | 3.13V | 57 | 0V |
| 8 | 0V | 58 | 0V |
| 9 | 0V | 59 | 3.2V |
| 10 | 0V | 60 | 0V |
| 11 | 0V | 61 | 0V |
| 12 | 3.03V | 62 | 3.2V |
| 13 | 1.43V | 63 | 0V |
| 14 | 0V | 64 | 0V |
| 15 | 1.57V | 65 | 3.2V |
| 16 | 3.2V | 66 | 0V |
| 17 | 3.19V | 67 | 0V |
| 18 | 3.1V | 68 | 0V |
| 19 | 0.03V | 69 | 0V |
| 20 | 0V | 70 | 0V |
| 21 | 0V | 71 | 0V |
| 22 | 3.18V | 72 | 3.1V |
| 23 | 3.2V | 73 | 3.2V |
| 24 | 0V | 74 | 0V |
| 25 | 2.67V | 75 | 0V |
| 26 | 3.19V | 76 | 3.2V |
| 27 | 0V | 77 | 0V |
| 28 | 0V | 78 | 0V |
| 29 | 2.4V | 79 | 0V |
| 30 | 0.24V | 80 | 3.2V |
| 31 | 0V | 81 | 0V |
| 32 | 0.3V | 82 | 3.19V |
| 33 | 3.2V | 83 | 0V |
| 34 | 1.56V | 84 | 3.19V |
| 35 | 1.0V | 85 | 0V |
| 36 | 0V | 86 | 3.18V |
| 37 | 2.77V | 87 | 3.2V |
| 38 | 0V | 88 | 0V |
| 39 | 3.18V | 89 | 1.03V |
| 40 | 0.02V | 90 | 1.6V |
| 41 | 3.19V | 91 | 0.56V |
| 42 | 3.2V | 92 | 1.49V |
| 43 | 0V | 93 | 1.49V |
| 44 | 0.05V | 94 | 0.68V |
| 45 | 3.18V | 95 | 0.61V |
| 46 | 3.19V | 96 | 0V |
| 47 | 0.51V | 97 | 0.53V |
| 48 | 0.4V | 98 | 3.2V |
| 49 | 0.3V | 99 | 3.2V |
| 50 | 0.55V | 100 | 0V |

| IC106 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 1.6V |
| 2 | 0.49V |
| 3 | 1.61V |
| 4 | 4.99V |
| 5 | 4.99V |
| 6 | 1.61V |
| 7 | 1.62V |
| 8 | 2.46V |
| 9 | 2.51V |
| 10 | 0V |
| 11 | 0V |
| 12 | 2.54V |
| 13 | 2.45V |
| 14 | 1.62V |
| 15 | 1.62V |
| 16 | 1.61V |
| 17 | 3.17V |
| 18 | 0V |
| 19 | 1.61V |
| 20 | 1.61V |
| 21 | 1.61V |
| 22 | 1.61V |
| 23 | 1.36V |
| 24 | 1.36V |
| 25 | 1.61V |
| 26 | 1.61V |
| 27 | 1.63V |
| 28 | 2.41V |
| 29 | 2.55V |
| 30 | 2.47V |
| 31 | 2.48V |
| 32 | 0V |
| 33 | 0V |
| 34 | 2.79V |
| 35 | 2.18V |
| 36 | 0V |
| 37 | 1.69V |
| 38 | 5.0V |
| 39 | 4.99V |
| 40 | 1.67V |
| 41 | 1.69V |
| 42 | 1.69V |

| IC108 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 2.47V |
| 2 | 2.63V |
| 3 | 4.87V |
| 4 | 2.63V |
| 5 | 1.59V |
| 6 | 0V |
| 7 | 0V |
| 8 | 4.87V |
| 9 | 0V |
| 10 | 2.25V |
| 11 | 4.94V |
| 12 | 4.94V |
| 13 | 4.94V |
| 14 | 4.94V |
| 15 | 3.12V |
| 16 | 4.94V |

| IC109 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 2.77V |
| 2 | 2.77V |
| 3 | 3.2V |
| 4 | 1.58V |
| 5 | 1.58V |
| 6 | 1.56V |
| 7 | 0V |
| 8 | 0V |
| 9 | 0V |
| 10 | 0V |
| 11 | 0V |
| 12 | 0V |
| 13 | 0V |
| 14 | 3.2V |

| IC110 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 0V |
| 2 | 3.2V |
| 3 | 0V |
| 4 | 3.2V |
| 5 | 0V |
| 6 | 0.11V |
| 7 | 0V |
| 8 | 0V |

| IC112 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 1.66V |
| 2 | 1.62V |
| 3 | 1.62V |
| 4 | 0V |
| 5 | 1.67V |
| 6 | 1.67V |
| 7 | 1.67V |
| 8 | 3.19V |

| IC113 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 4.95V |
| 2 | 3.96V |
| 3 | 0V |
| 4 | 0V |
| 5 | 0V |
| 6 | 0V |
| 7 | 0V |
| 8 | 0V |
| 9 | 4.94V |
| 10 | 4.12V |
| 11 | 3.19V |
| 12 | 0V |
| 13 | 0V |
| 14 | 4.94V |

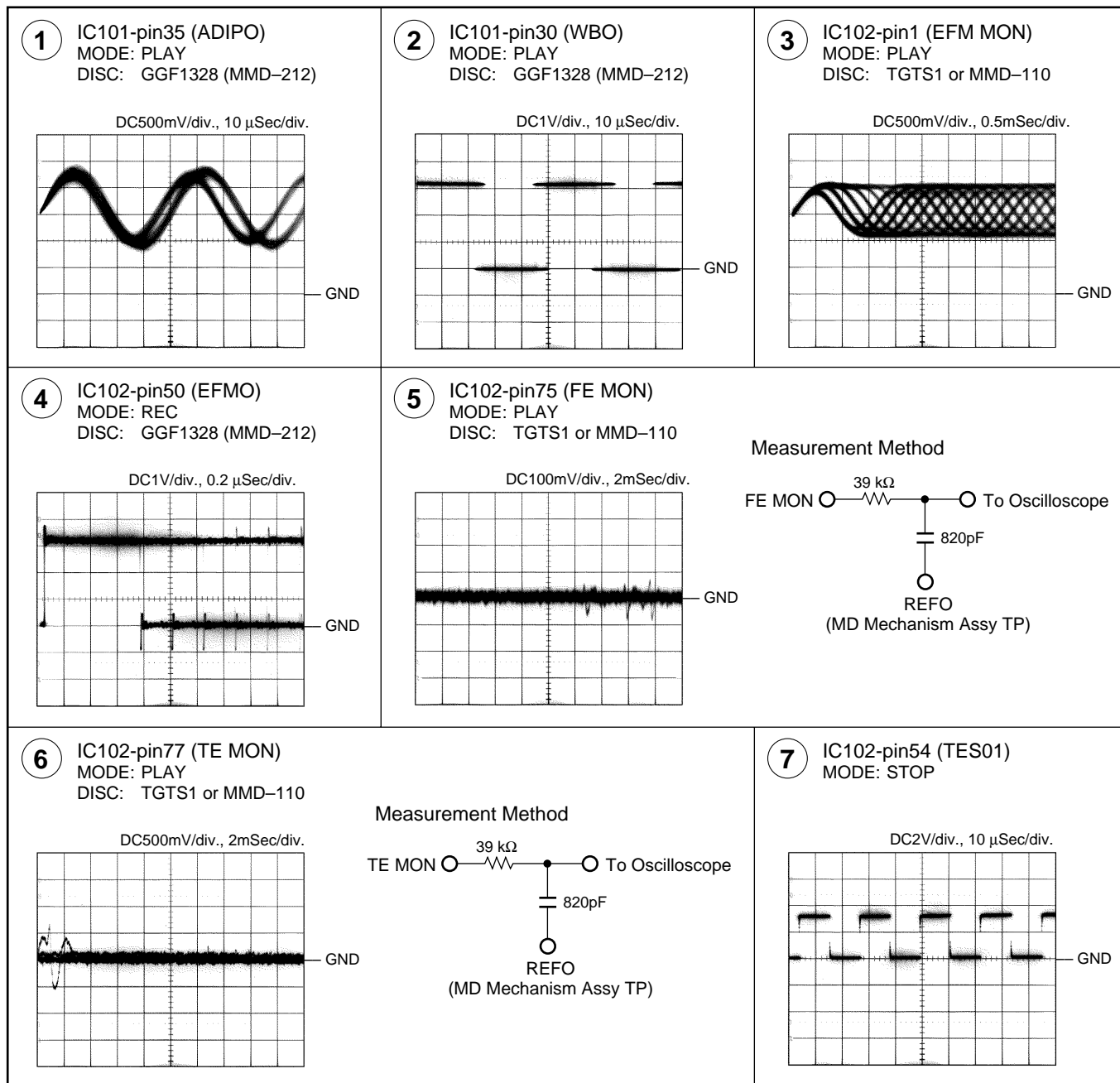
| IC114 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 0V |
| 2 | 4.19V |
| 3 | 3.21V |
| 4 | 2.81V |
| 5 | 0V |

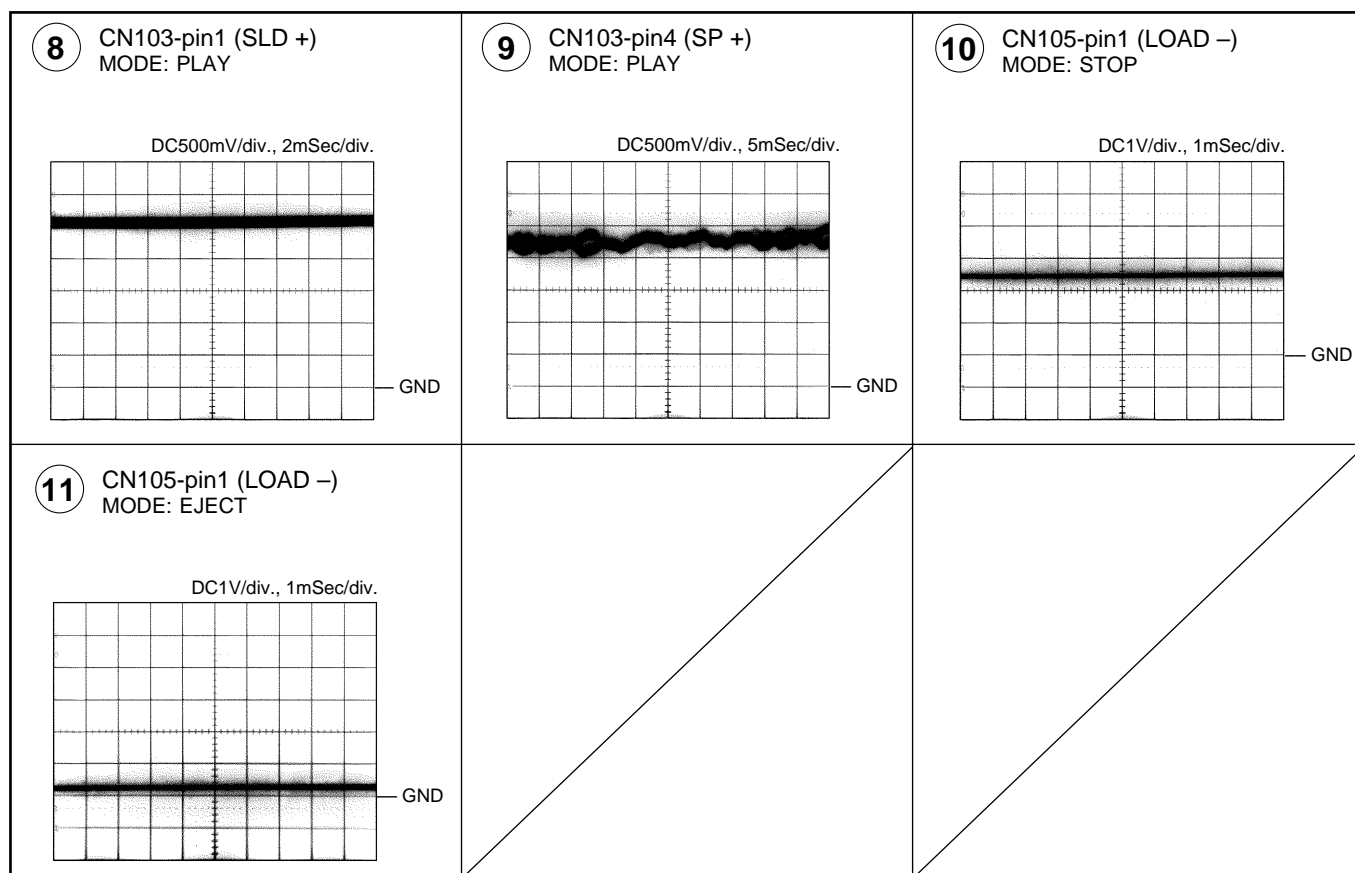
| IC116 | |
|---------|---------|
| PIN NO. | VOLTAGE |
| 1 | 4.98V |
| 2 | 0V |
| 3 | 0V |
| 4 | 4.99V |
| 5 | 3.2V |
| 6 | 0V |
| 7 | 0.03V |
| 8 | 3.18V |
| 9 | 0V |
| 10 | 0V |
| 11 | 0V |
| 12 | 0.22V |
| 13 | 0V |
| 14 | 0.25V |
| 15 | 0.25V |
| 16 | 2.82V |
| 17 | 0.16V |
| 18 | 4.94V |
| 19 | 2.82V |
| 20 | 1.33V |

Waveforms

Note: The encircled numbers denote measuring point in the schematic diagram and the PCB connection diagram.

J CORE MAIN ASSY





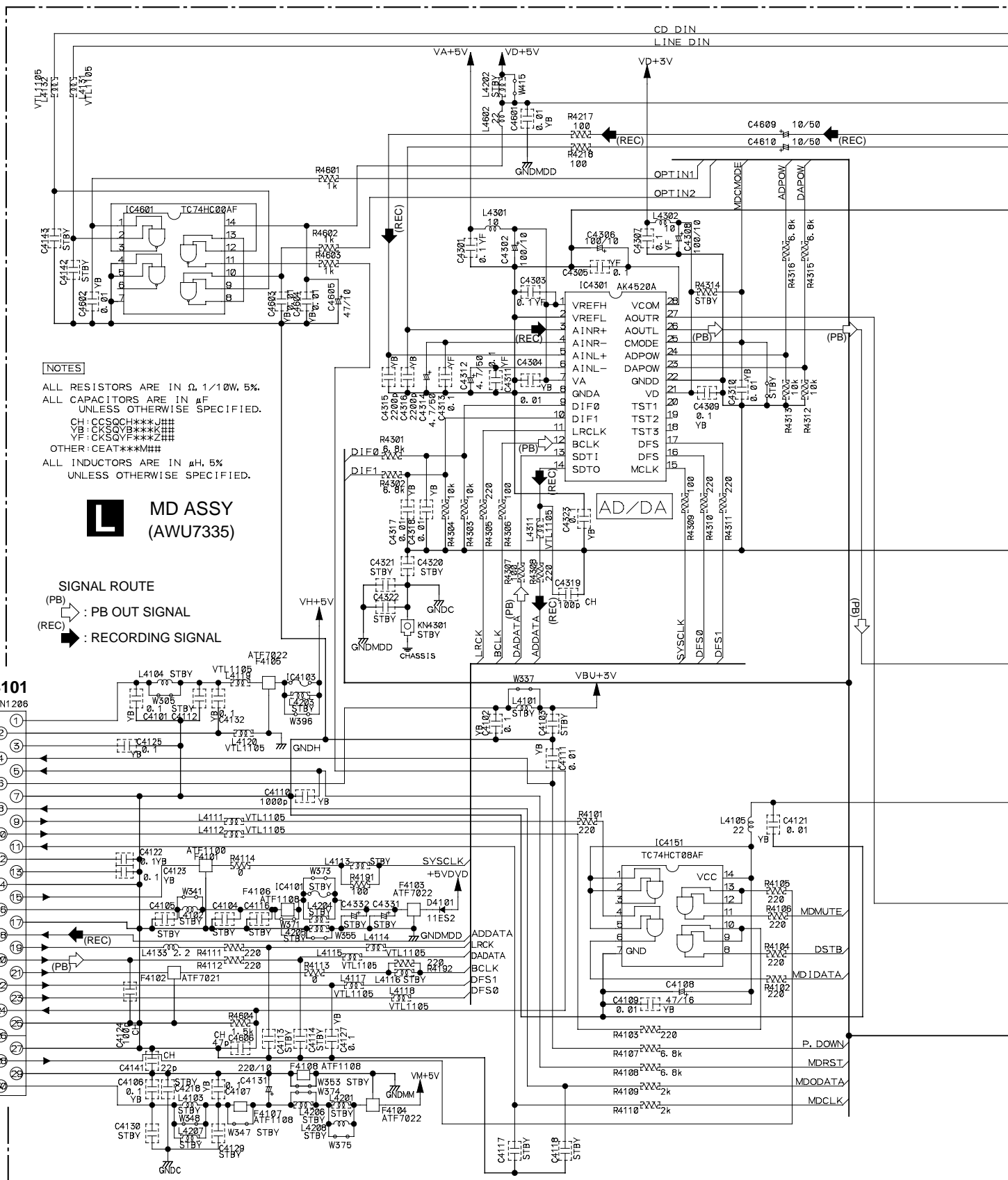
3.9 MD ASSY

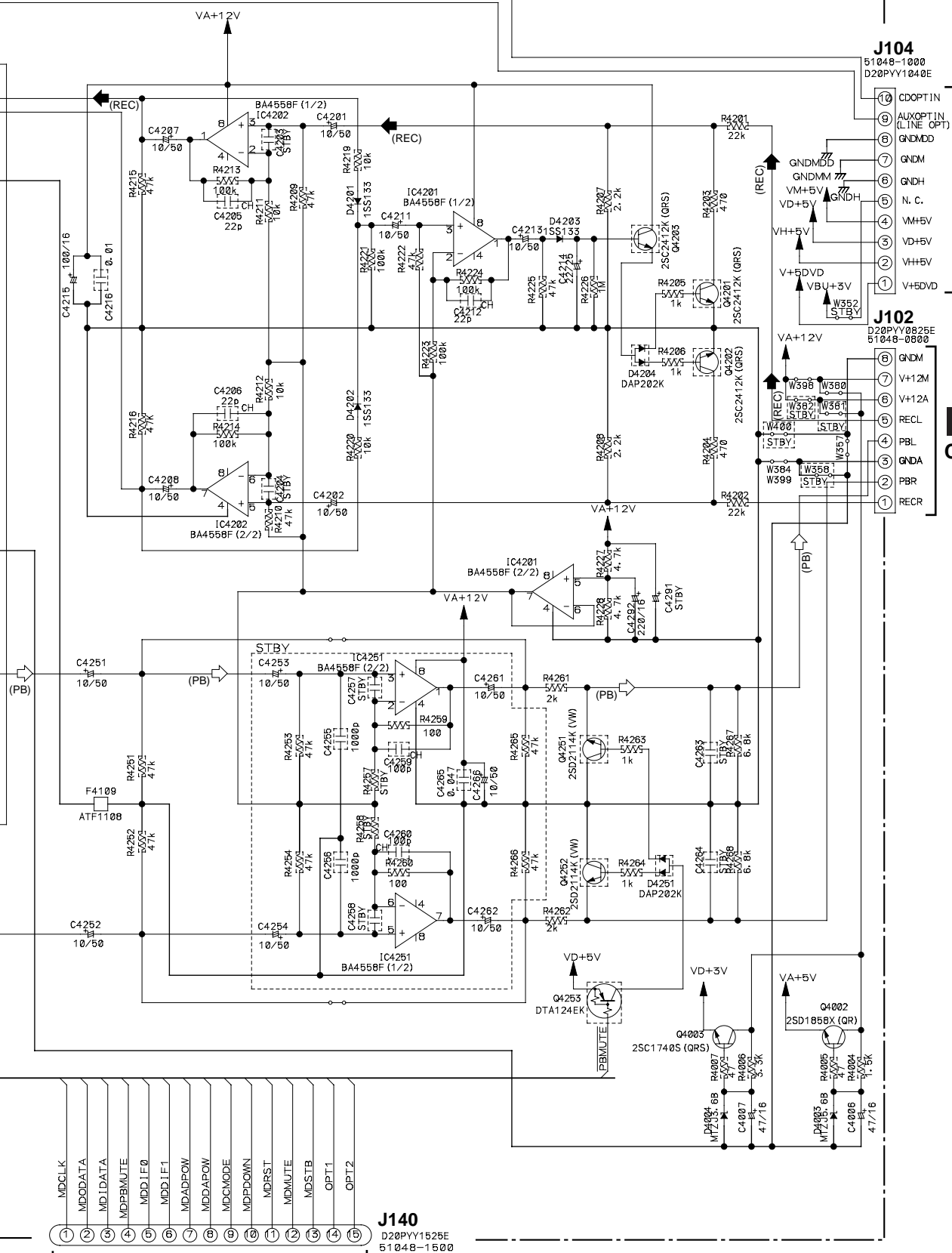
A

B

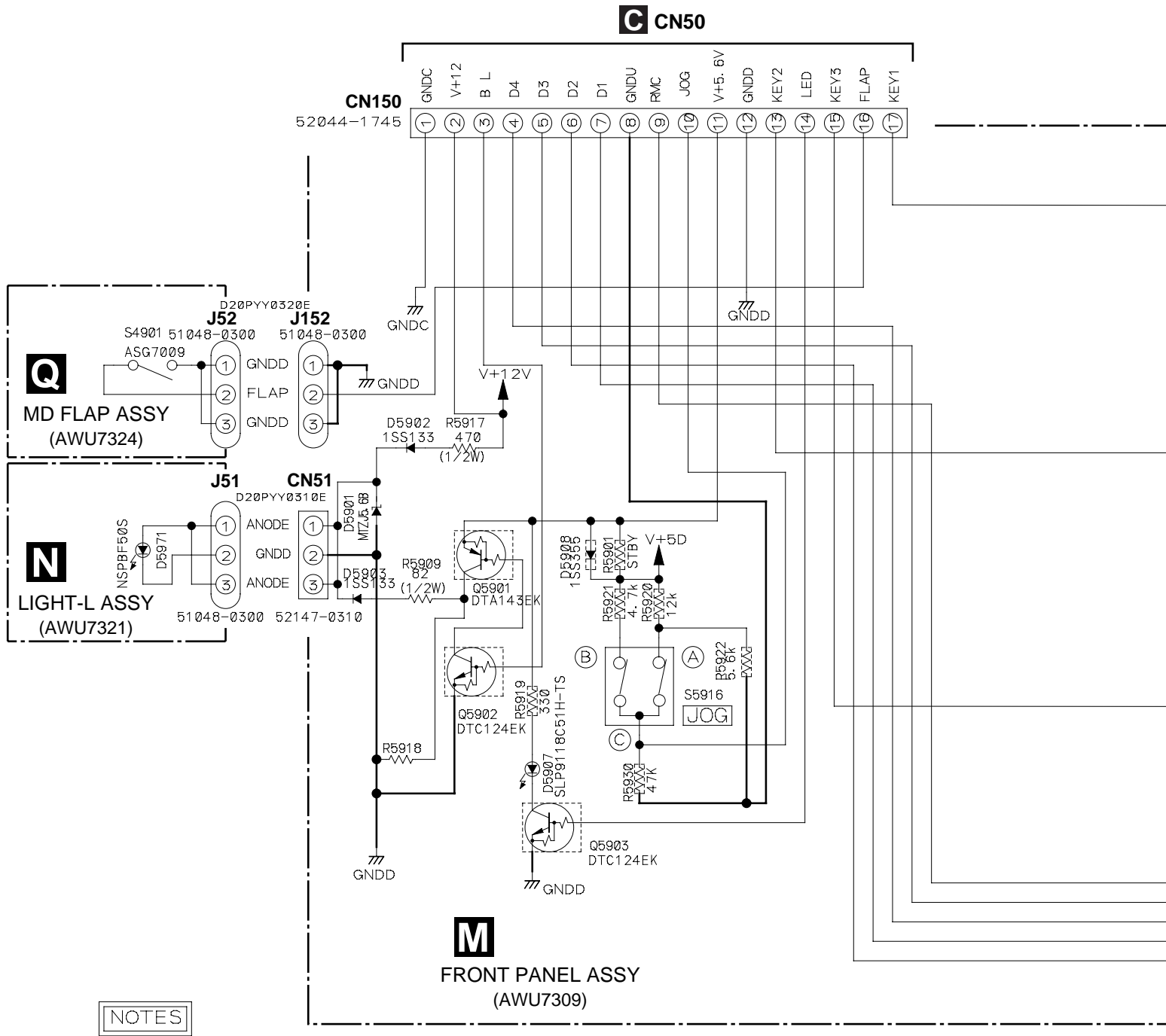
C

D



**C CN40**

3.10 FRONT PANEL, LIGHT-L, CD OPEN SW and CD CLOSE SW ASSYS



NOTES

ALL CAPACITORS ARE IN μF
UNLESS OTHERWISE SPECIFIED

TL : CFTLA
M : CQMA
CH : CCSQCH
YB : CKSQYB
SL : CCSQSL
(OTHER : CKSQYF)
AL : CEAL
JA : CEJA
(OTHER : CEAT***M##)

ALL RESISTORS ARE IN Ω

1/10W (CHIP)
1/4WPU

ALL INDUCTORS ARE IN μH

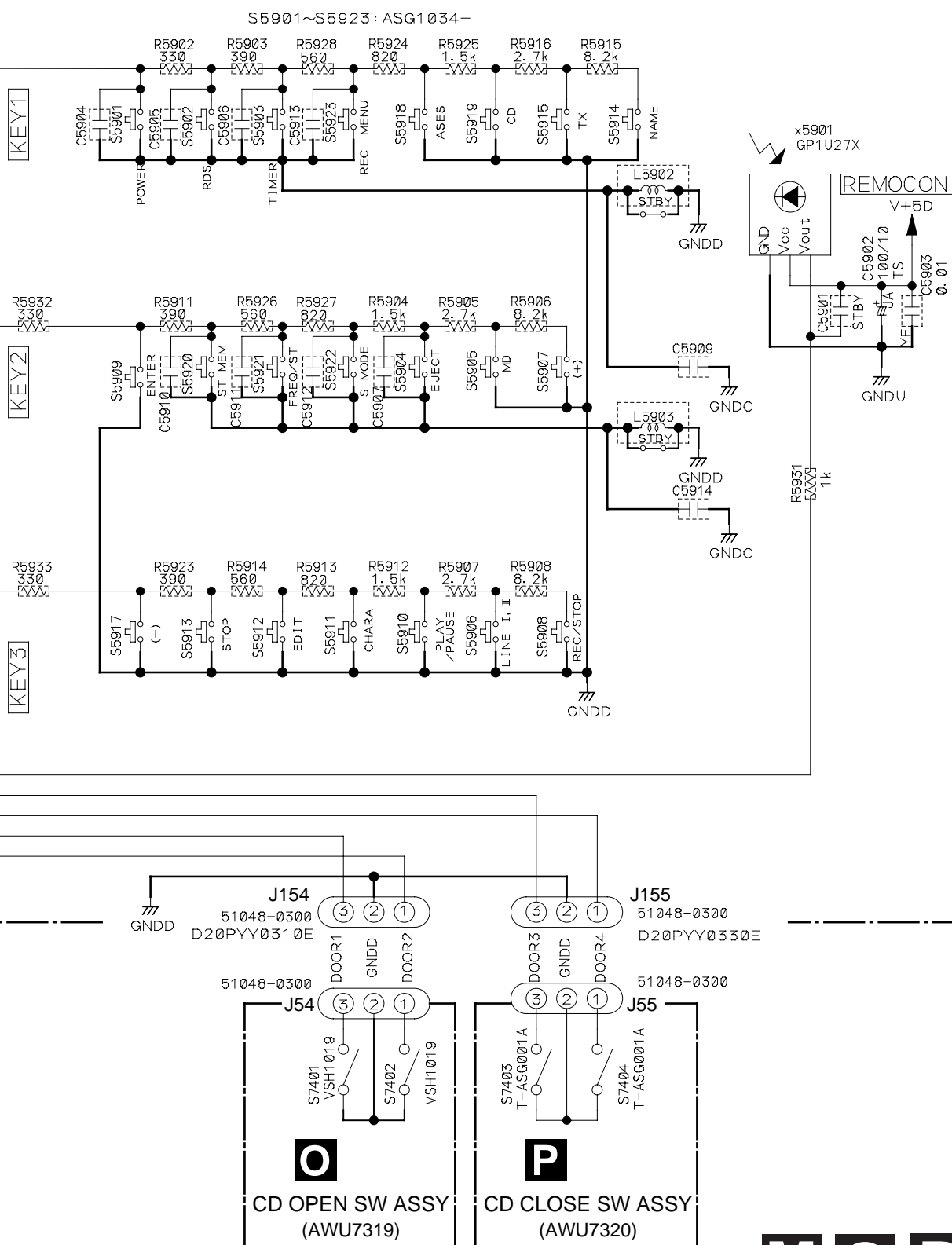
LAU

FRONT PANEL ASSY (SW name)

S5901: POWER (STANDBY/ON)
 S5902: DISPLAY/RDS
 S5903: TIMER REC/WAKE UP
 S5904: MD EJECT
 S5905: MD
 S5906: LINE1, 2
 S5907: ◀◀◀◀/TUNING+
 S5908: REC/STOP

S5909: TREBLE
 S5910: PLAY/PAUSE
 S5911: ST.WIDE
 S5912: BASS
 S5913: STOP
 S5914: BALANCE
 S5915: TUNER
 S5916: VOLUME/JOG


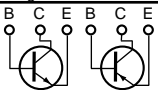

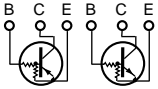

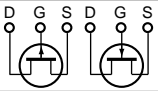

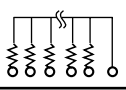


S5917: ▶▶▶▶/TUNING-
 S5918: BALANCE
 S5919: CD
 S5920: STATION MEMORY
 S5921: FREQ/STATION
 S5922: REVERSE
 S5923: DOLBY NR ON/OFF



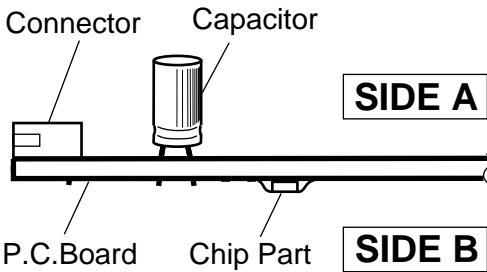
4. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

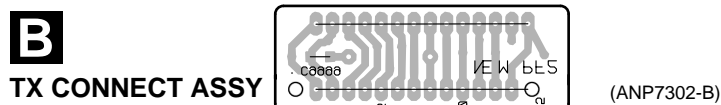
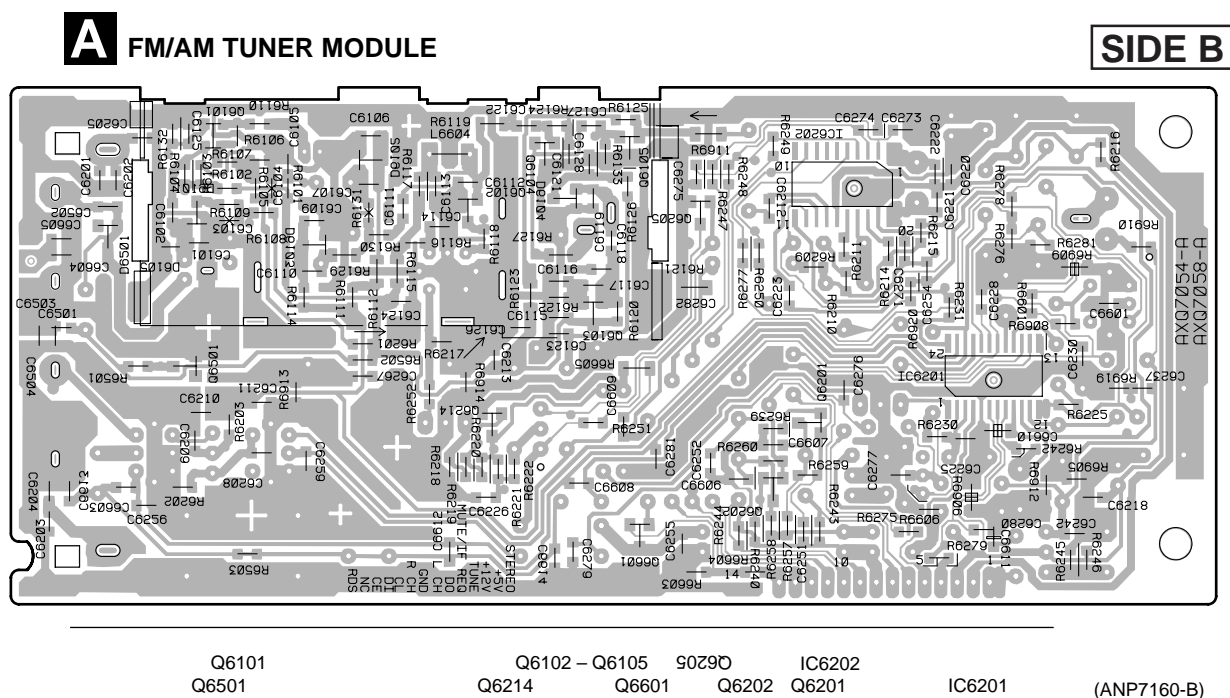
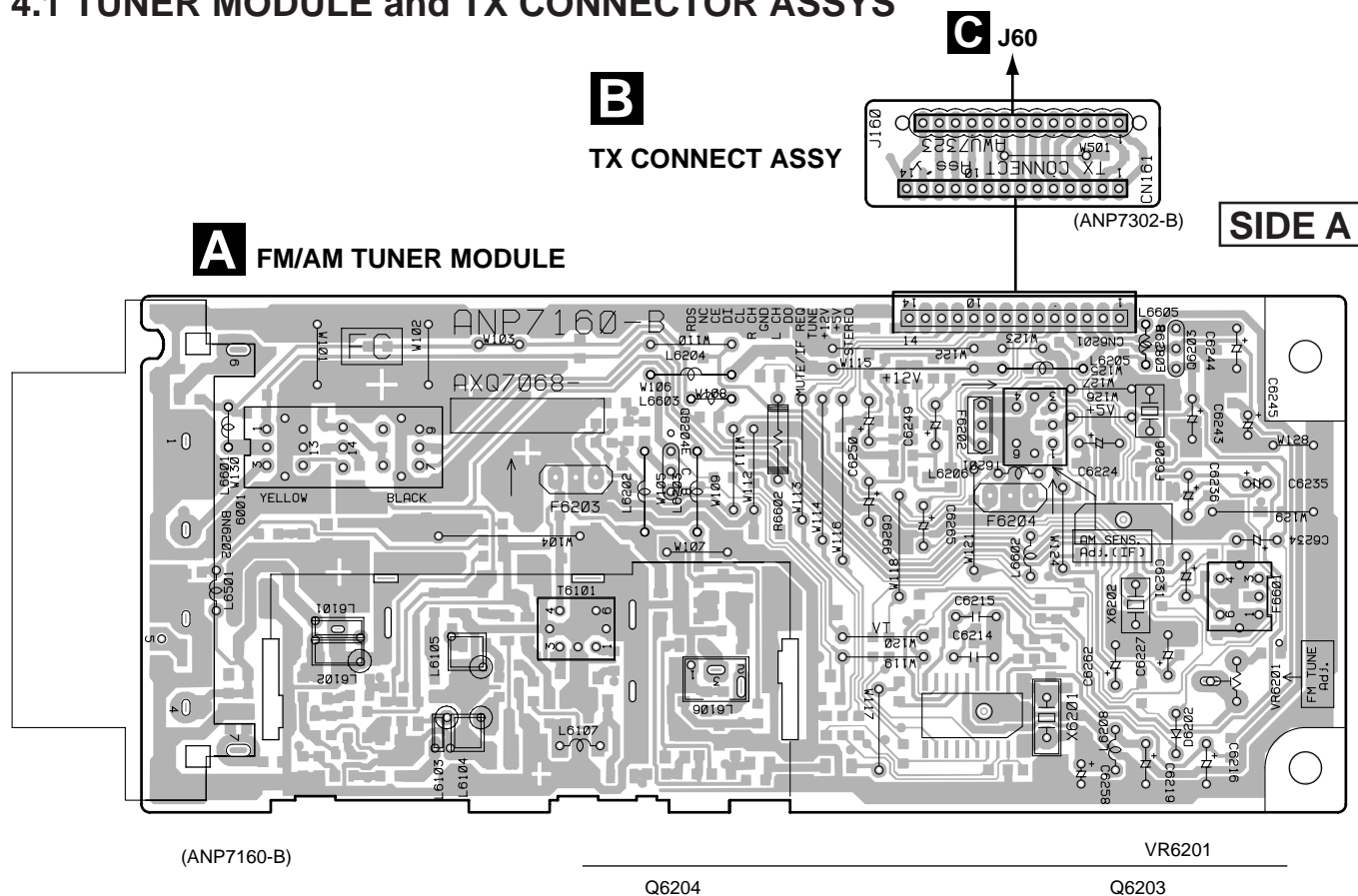
- 1. Part numbers in PCB diagrams match those in the schematic diagrams.
- 2. A comparison between the main parts of PCB and schematic diagrams is shown below.

| Symbol In PCB Diagrams | Symbol In Schematic Diagrams | Part Name |
|---|---|--------------------------|
|  |  | Transistor |
|  |  | Transistor with resistor |
|  |  | Field effect transistor |
|  |  | Resistor array |
|  |  | 3-terminal regulator |

- 3. The parts mounted on this PCB include all necessary parts for several destinations.
For further information for respective destinations, be sure to check with the schematic diagram.
- 4. View point of PCB diagrams.



4.1 TUNER MODULE and TX CONNECTOR ASSYS

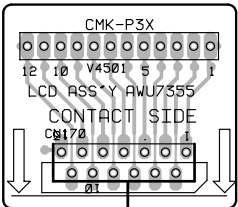


4.2 U-COM and LCD ASSYS

A

SIDE A

D LCD ASSY

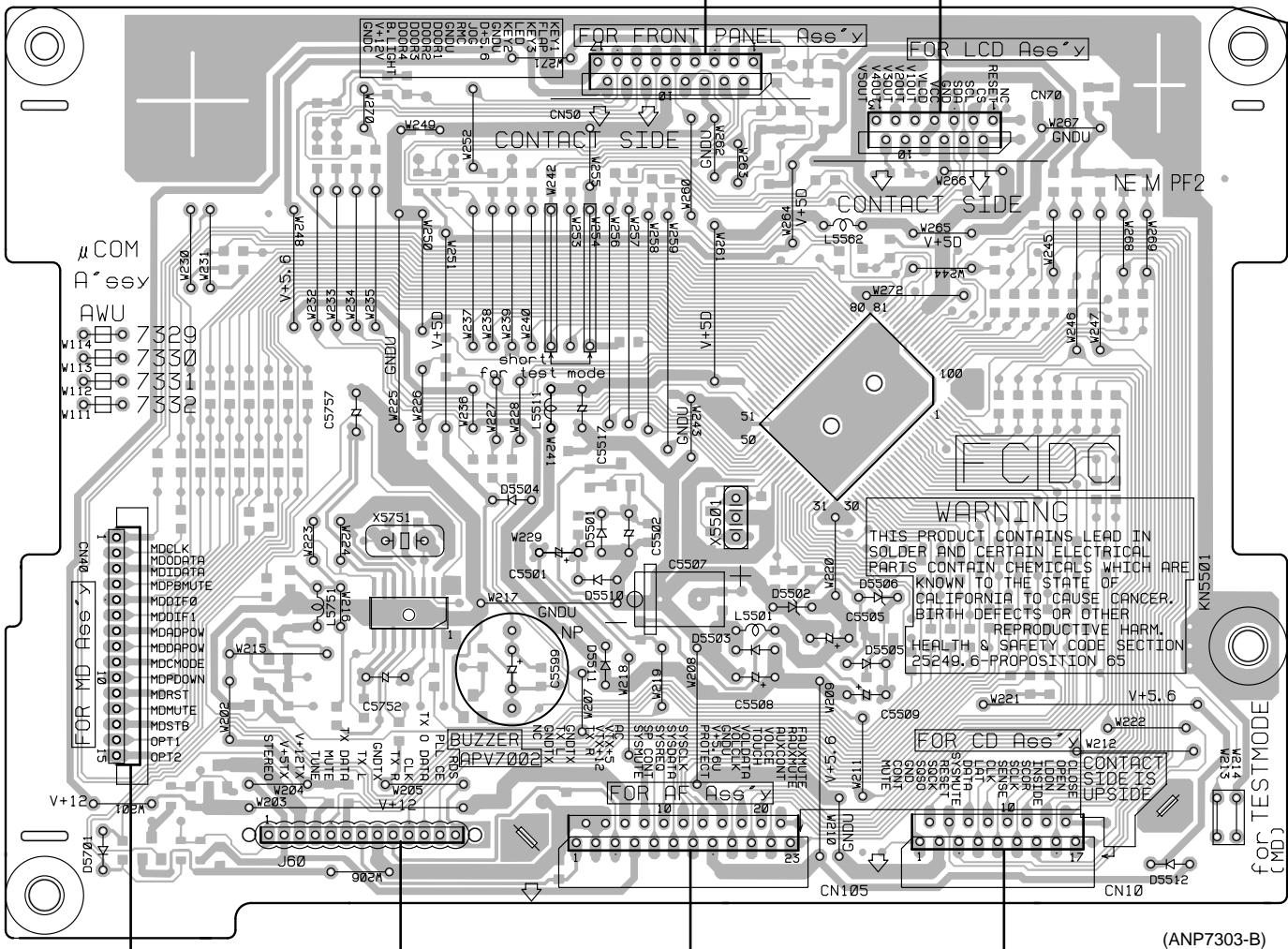


(ANP7301-B)

M CN150

C U-COM ASSY

B



(ANP7303-B)

D

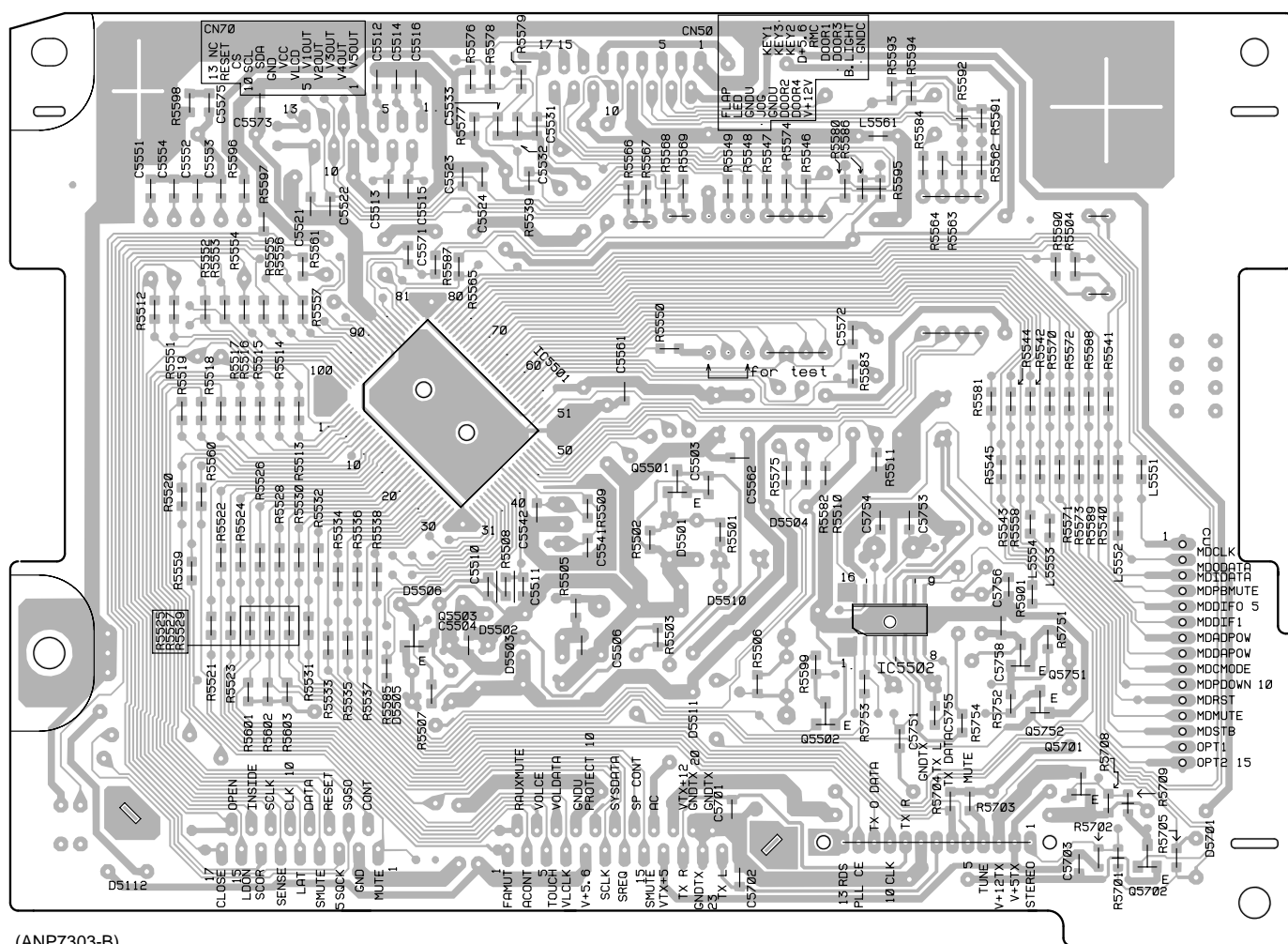
L J140

B J160

E CN5

F CN110

SIDE B



IC5501
Q5506

Q5501

IC5502
Q5502

Q5751
Q5752 Q5701 Q5502

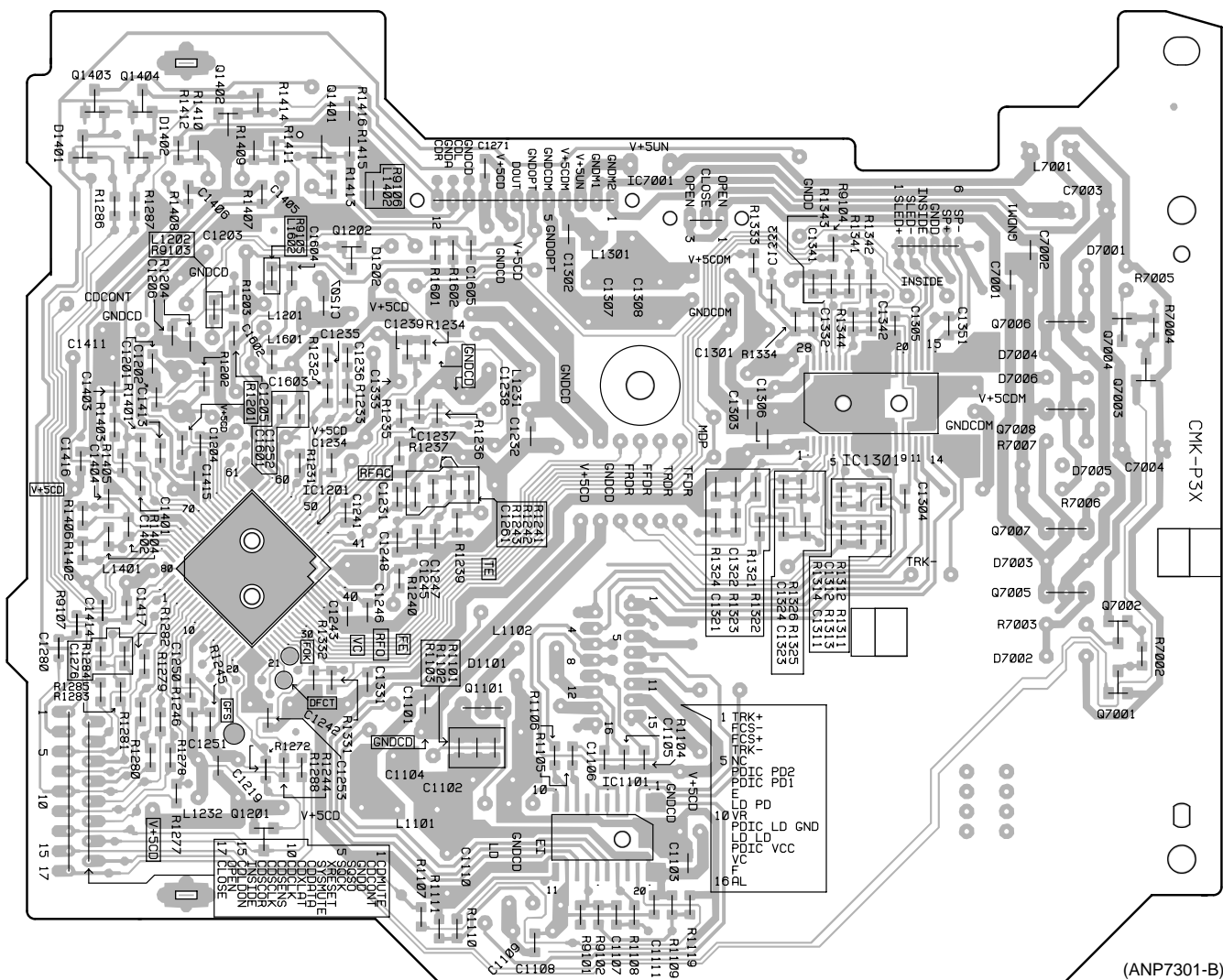
SIDE B

F CD ASSY

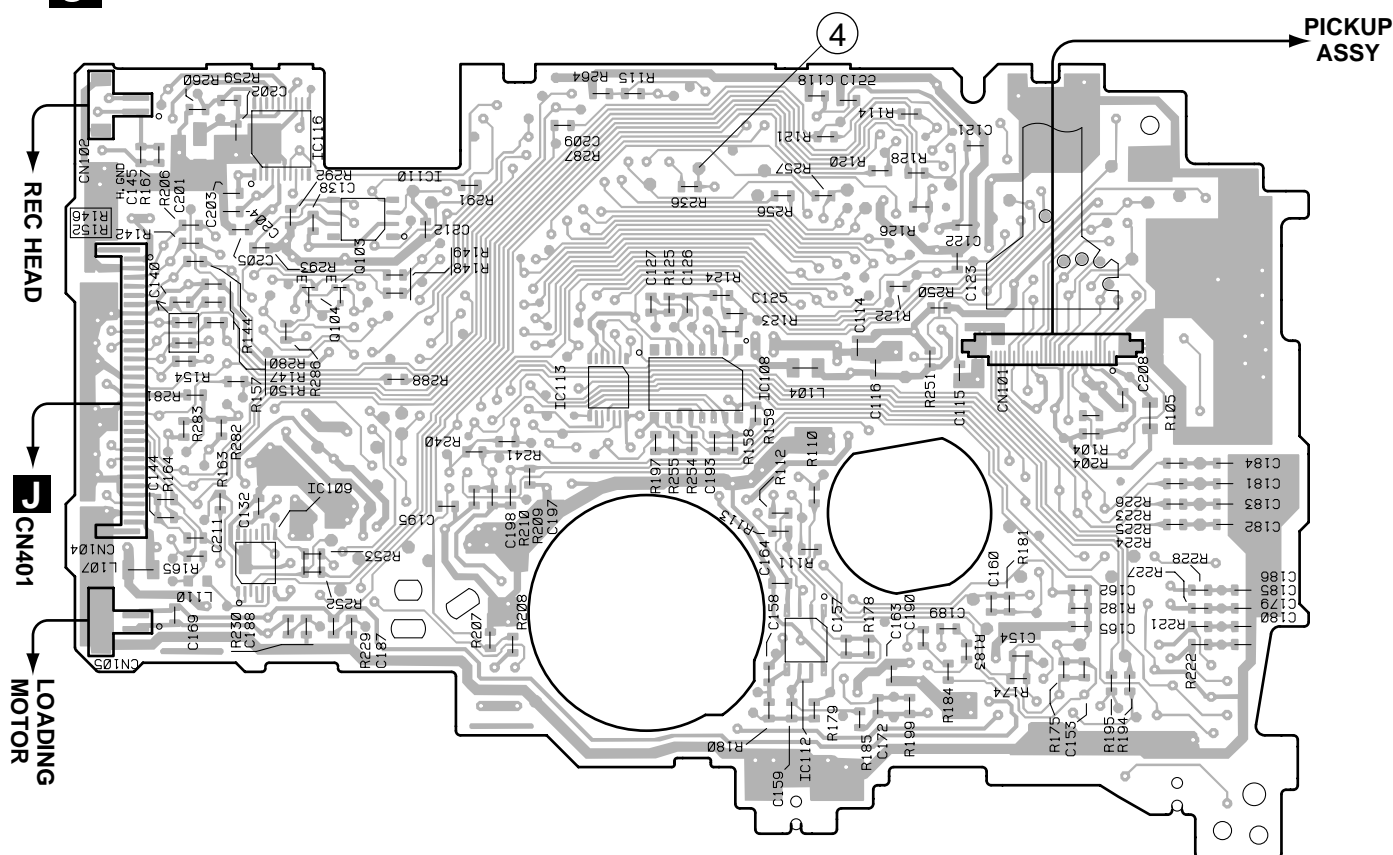
Q1403 Q1404 Q1402 Q1401
IC1201 Q1202

IC1301

Q7004
Q7002 Q7003
Q7001



J CORE MAIN ASSY



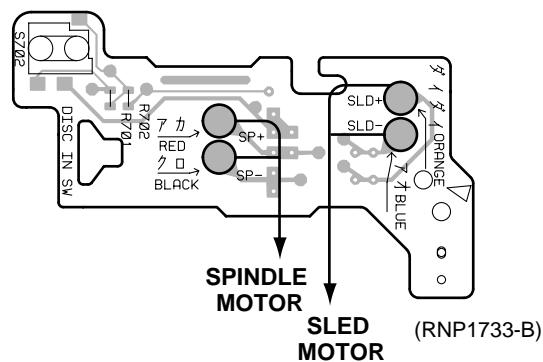
IC109 Q103
Q104 IC110
IC116

IC113 IC108 IC112

(RNP1733-B)

SIDE B

K CORE SW ASSY

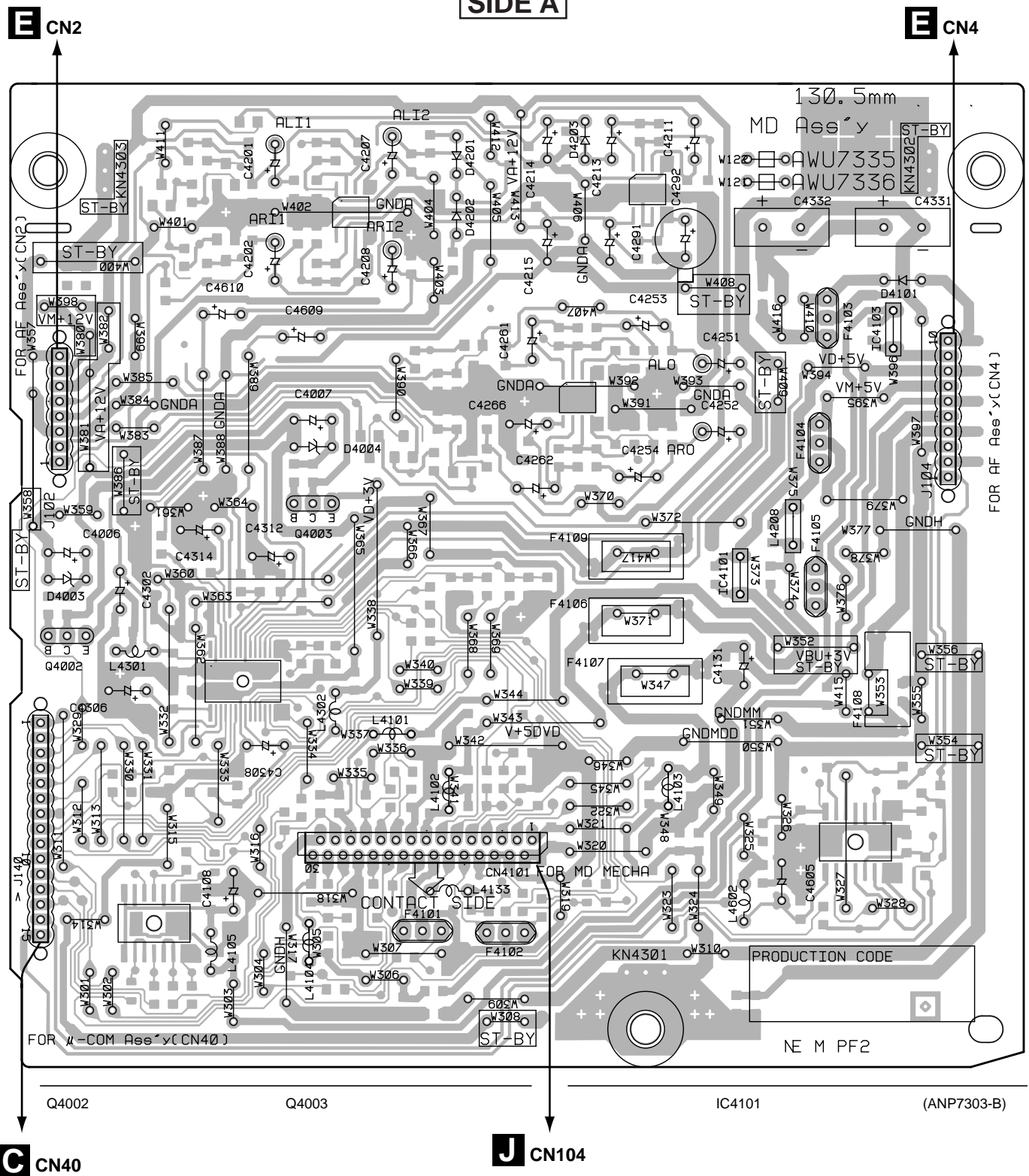


(RNP1733-B)

4.6 MD ASSY

MD ASSY

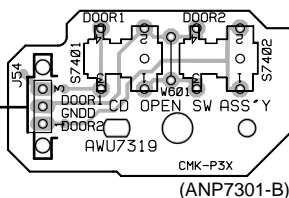
SIDE A



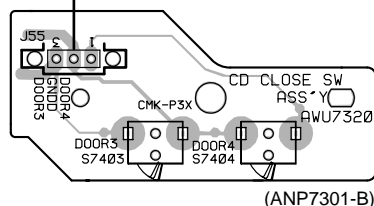
4.7 FRONT, LIGHT-L, CD CLOSE SW and CD OPEN SW ASSYS

M FRONTPANEL ASSY

O CD OPEN SW ASSY

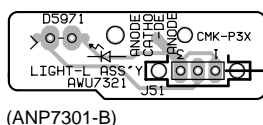


P CD CLOSE SW ASSY

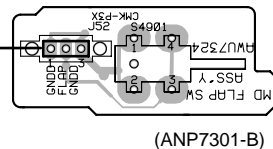


C CN50

N LIGHT-L ASSY

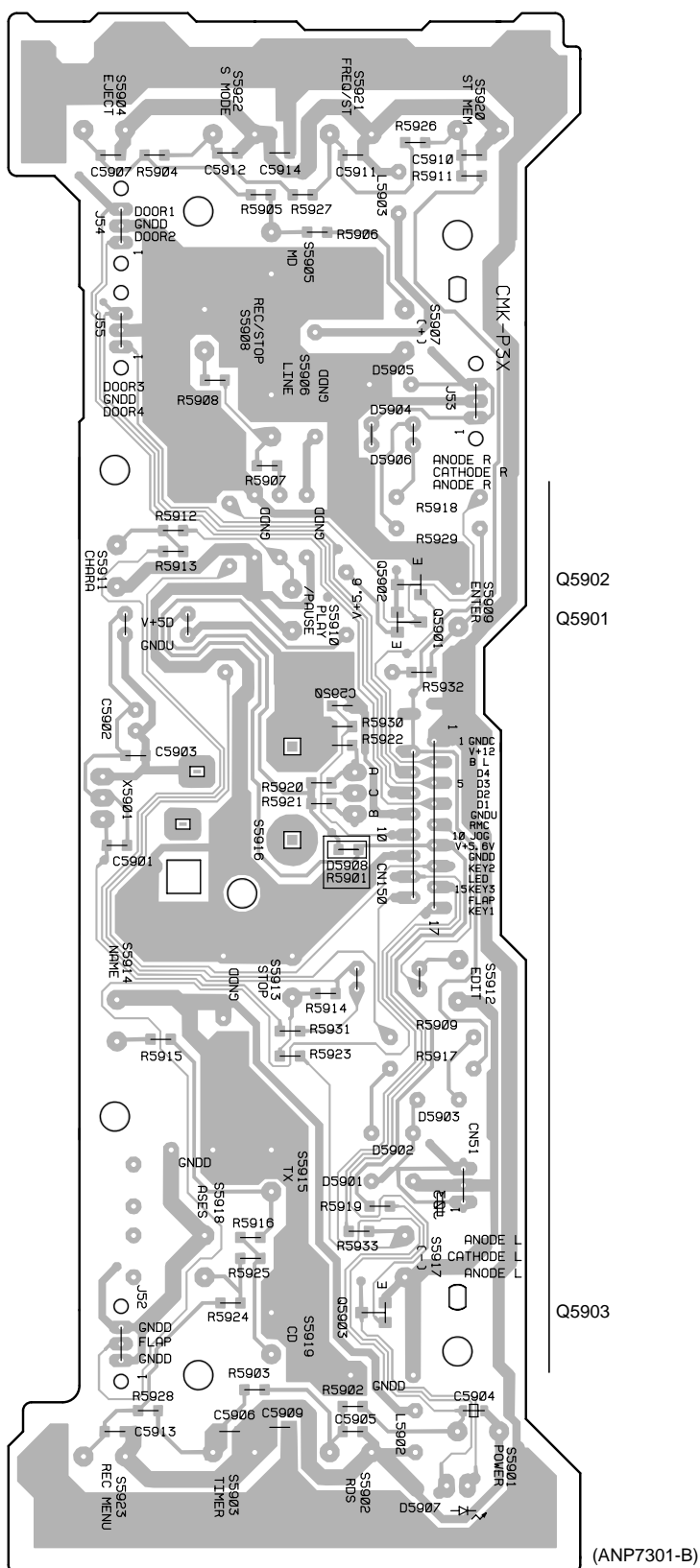


Q MD FLAP SW ASSY



SIDE A

M FRONT PANEL ASSY



SIDE B

(ANP7301-B)

5. PCB PARTS LIST

NOTES: ●Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.

●The Δ mark found on some component parts indicates the importance of the safety factor of the part.

Therefore, when replacing, be sure to use parts of identical designation.

●When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

$560\ \Omega \rightarrow 56 \times 10^1 \rightarrow 561 \dots\dots\dots RD1/4PU \begin{array}{|c|c|c|} \hline 5 & 6 & 1 \\ \hline \end{array} J$
 $47k\ \Omega \rightarrow 47 \times 10^3 \rightarrow 473 \dots\dots\dots RD1/4PU \begin{array}{|c|c|c|} \hline 4 & 7 & 3 \\ \hline \end{array} J$
 $0.5\ \Omega \rightarrow R50 \dots\dots\dots RN2H \begin{array}{|c|c|c|} \hline R & 5 & 0 \\ \hline \end{array} K$
 $1\ \Omega \rightarrow 1R0 \dots\dots\dots RS1P \begin{array}{|c|c|c|} \hline 1 & R & 0 \\ \hline \end{array} K$

Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).

$5.62k\ \Omega \rightarrow 562 \times 10^1 \rightarrow 5621 \dots\dots\dots RN1/4PC \begin{array}{|c|c|c|c|c|} \hline 5 & 6 & 2 & 1 & \\ \hline \end{array} F$

| Mark | No. | Description | Part No. |
|------|-----|-------------|----------|
|------|-----|-------------|----------|

LIST OF ASSEMBLIES

| | | | |
|--|--|--------------------|---------|
| | | FM/AM TUNER MODULE | AXQ7068 |
|--|--|--------------------|---------|

| | | | |
|-----|--|--------------------|---------|
| NSP | | COMPLEX ASSY | AWM7435 |
| | | — AF ASSY | AWU7300 |
| | | — CD ASSY | AWU7306 |
| | | — FRONT PANEL ASSY | AWU7309 |
| NSP | | — F-TERMINAL ASSY | AWU7312 |
| NSP | | — R-TERMINAL ASSY | AWU7316 |
| | | — CD MOTOR ASSY | AWU7318 |
| NSP | | — CD OPEN SW ASSY | AWU7319 |
| NSP | | — CD CLOSE SW ASSY | AWU7320 |
| NSP | | — LIGHT-L ASSY | AWU7321 |
| NSP | | — MD FLAP ASSY | AWU7324 |
| NSP | | — LCD ASSY | AWU7355 |

| | | | |
|-----|--|-------------------|---------|
| NSP | | MD-COMP ASSY | AWM7443 |
| NSP | | — TX CONNECT ASSY | AWU7323 |
| | | — U-COM ASSY | AWU7329 |
| | | — MD ASSY | AWU7335 |

| | | | |
|-----|--|---------------------|---------|
| | | MD CORE ASSY | RWM2058 |
| | | — MD CORE MAIN ASSY | RWZ4334 |
| NSP | | — MD CORE ASSY | RWZ4335 |

A FM/AM TUNER MODULE SEMICONDUCTORS

| | |
|--------------|-----------|
| IC6201 | LA1832ML |
| IC6202 | LC72131MD |
| Q6102 | 2SC2223 |
| Q6203 | 2SC2705 |
| Q6201, Q6202 | 2SC2712 |

| | |
|---------------------|----------|
| Q6103, Q6214, Q6601 | 2SC2714 |
| Q6104, Q6105 | 2SK302 |
| Q6101 | 3SK194 |
| Q6204 | DTA124ES |
| Q6205 | DTC124EK |

| | |
|-------------|--------|
| D6202 | 1SS254 |
| D6101-D6104 | 1SV228 |

COILS AND FILTERS

| | |
|-------|---------|
| L6106 | ATC1003 |
| L6105 | ATC1015 |
| L6101 | ATC1016 |
| L6102 | ATC1017 |
| L6103 | ATC1018 |

| Mark | No. | Description | Part No. |
|------|-----|-------------|----------|
|------|-----|-------------|----------|

| | | |
|--|-------|---------|
| | L6104 | ATC1019 |
| | F6203 | ATF-119 |
| | F6206 | ATF7008 |
| | F6601 | ATF7009 |
| | F6204 | ATF7010 |

| | | |
|--|---------------------|---------|
| | F6202 | ATF7011 |
| | L6107 | ATH1043 |
| | L6603 | LAU220J |
| | L6206, L6208, L6605 | LAU2R2J |

TRANSFORMERS

| | | |
|--|-------|---------|
| | T6201 | ATB7008 |
| | T6101 | ATE7002 |

CAPACITORS

| | |
|-----------------------------------|--------------|
| C6113, C6212, C6274, C6275, C6611 | CCSQCH101J50 |
| C6116, C6208, C6221 | CCSQCH150J50 |
| C6222 | CCSQCH180J50 |
| C6271 | CCSQCH200J50 |
| C6117 | CCSQCH330J50 |

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|--------------|--------------|
| C6608 | CCSQCH680J50 |
| C6118 | CCSQCH8R0D50 |
| C6111, C6122 | CCSQCK1R0C50 |
| C6112, C6127 | CCSQCK2R0C50 |
| C6105 | CCSQSL471J50 |

| | |
|--------------|--------------|
| C6101 | CCSQTH110J50 |
| C6119 | CCSQTH150J50 |
| C6109 | CCSQTH270J50 |
| C6107, C6110 | CCSQTH300J50 |
| C6106 | CCSQTH330J50 |

| | |
|--------------|------------|
| C6234, C6235 | CEAL1R0M50 |
| C6245 | CEAL470M16 |
| C6224 | CEAS100M50 |
| C6243 | CEAS101M16 |
| C6231 | CEAS1R0M50 |

| | |
|-------|------------|
| C6227 | CEAS220M16 |
| C6236 | CEAS2R2M50 |
| C6216 | CEAS330M16 |
| C6262 | CEAS3R3M50 |
| C6219 | CEAS470M10 |

| | |
|----------------------------|-------------|
| C6244 | CEAS470M16 |
| C6249, C6250, C6265, C6266 | CEAS4R7M50 |
| C6258 | CEJA470M16 |
| C6215 | CFTLA103J50 |
| C6214 | CFTLA224J50 |

| Mark | No. | Description | Part No. |
|------|---|-------------|--|
| | C6115, C6125, C6126, C6211, C6254 C6601 | | CKSQYB102K50 CKSQYB102K50 |
| | C6102, C6114, C6121, C6123, C6124 C6210, C6213, C6237, C6267, C6276 C6279, C6281, C6604 | | CKSQYB103K50 CKSQYB103K50 CKSQYB103K50 |
| | C6251, C6252 C6606, C6607 C6203, C6259 C6228 C6209 | | CKSQYB123K50 CKSQYB182K50 CKSQYB223K50 CKSQYB472K50 CKSQYB473K50 |
| | C6230 C6218, C6223, C6255 C6220, C6226, C6242, C6256 C6225 C6610 | | CKSQYB821K50 CKSQYF103Z50 CKSQYF223Z50 CKSQYF473Z50 CKSYB103K50 |

RESISTORS

| | |
|-----------------------------------|-------------|
| R6602 | RD1/4PU221J |
| R6115, R6119, R6123, R6127, R6129 | RS1/8S0R0J |
| R6906, R6909, R6911 | RS1/8S0R0J |
| R6112 | RS1/8S473J |
| VR6201 (10kΩ) | RCP1045 |
| Other Resistors | RS1/10S□□□J |

OTHERS

| | |
|-------------------------------|------------|
| BN6202 (2P TERMINAL WITH PAL) | AKA7001 |
| X6202 (456 kHz) | ASS1066 |
| X6201 (7.2000 MHz) | ASS1093 |
| CN6201 (14P SOCKET) | KP200IA14L |

FAF ASSY SEMICONDUCTORS

| | |
|----------------------------|-----------|
| IC3001 | LC75396NE |
| IC7301 | NJM062M |
| IC3002 | NJM4558MD |
| IC141, IC4001 | NJM7805FA |
| IC131 | NJM7812FA |
| Q3004 | 2SC2412K |
| Q3001, Q3002, Q3005, Q3006 | 2SD2114K |
| Q3009, Q3010 | 2SD2114K |
| Q3003 | DTA124EK |
| Q3011, Q3013, Q3015 | DTA143EK |
| Q7301 | DTC114EK |
| Q3014 | DTC124EK |
| D3006, D3007, D7301–D7304 | 1SS133 |
| D3011, D3016 | 1SS355 |
| D3004 | MTZJ11C |
| D3008, D3009 | S5688G |

COILS AND FILTERS

| | |
|-------------|---------|
| L7301 | LAU220J |
| L3110 | VTL1096 |
| L3101–L3105 | VTL1105 |

CAPACITORS

| | |
|----------------------------|--------------|
| C3057–C3059, C3203, C3204 | CCSQCH101J50 |
| C3207, C3208 | CCSQCH101J50 |
| C3070 | CCSQCH270J50 |
| C3205, C3206 | CCSQCH271J50 |
| C3011, C3012, C3025, C3026 | CEAT100M50 |

| Mark | No. | Description | Part No. |
|------|--|-------------|--|
| | C3029, C3030 C131, C141, C3041, C3042 C3031 C4006 C3001–C3008, C3013, C3014 | | CEAT100M50 CEAT1R0M50 CEAT220M50 CEAT221M16 CEAT2R2M50 |
| | C3023, C3024, C3035, C3036 C3055, C3056 C133, C143, C3096, C4003, C7302 C7304 C3015, C3016 | | CEAT2R2M50 CEAT2R2M50 CEAT470M16 CEJA4R7M50 CFTYA474J50 |
| | C3202 C3110 C7301 C3121–C3123 C3155, C3156 | | CKSQYB102K50 CKSQYB103K50 CKSQYB221K50 CKSQYB223K50 CKSQYB472K50 |
| | C3047, C3048 C3019, C3020 C3021, C3022 C3032 C132, C142, C3017, C3018, C3044 | | CKSQYB473K50 CKSQYB562K50 CKSQYB681K50 CKSQYB682K50 CKSQYF104Z50 |
| | C3099, C4002, C7305 C3045, C3046 | | CKSQYF104Z50 CKSQYF684Z16 |

RESISTORS

| | |
|---------------|-------------|
| All Resistors | RS1/10S□□□J |
|---------------|-------------|

OTHERS

| | |
|----------------------------|------------|
| CN5 (23P FFC CONNECTOR) | 52045-2345 |
| CN2 (8P JUMPER CONNECTOR) | 52147-0810 |
| CN4 (10P JUMPER CONNECTOR) | 52147-1010 |
| CN1 (12P JUMPER CONNECTOR) | 52147-1210 |
| CN7 (3P CONNECTOR) | B3B-PH-K-S |
| CN31 (10P PLUG) | KM200IB10 |
| CN32 (12P PLUG) | KM200IB12 |
| CN3 (9P JUMPER CONNECTOR) | KPE9 |

FC D ASSY SEMICONDUCTORS

| | |
|---------------------------|----------|
| IC1301 | BA5970FP |
| IC1101 | CXA1821M |
| IC1201 | CXD2587Q |
| Q7002, Q7004 | 2SA1037K |
| Q1101 | 2SA854S |
| Q7005–Q7008 | 2SD1858X |
| Q1401, Q1402 | 2SD2114K |
| Q1201, Q1403, Q1404 | DTA124EK |
| Q1202 | DTC114TK |
| Q7001, Q7003 | DTC124EK |
| D1101, D1202, D7003–D7006 | 1SS133 |
| D1201 | 1SS85 |
| D1401, D1402 | DAN202K |
| D7002 | MTZJ3.6B |
| D7001 | MTZJ6.2C |

COILS AND FILTERS

| | |
|-----------------------------------|---------|
| L1101, L1102, L1201, L1231, L1232 | LAU100J |
| L1401, L1601 | LAU100J |
| L7001 | LFA100J |
| L1402, L1602 | VTL1105 |

XC-IS21MD

| Mark | No. | Description | Part No. |
|------|-----|-------------|----------|
|------|-----|-------------|----------|

CAPACITORS

| | |
|-----------------------------------|--------------|
| C1201, C1202 | CCSQCH150J50 |
| C1401, C1402 | CCSQCH151J50 |
| C1107 | CCSQCH220J50 |
| C1239, C1246, C1247 | CCSQCH221J50 |
| C1604 | CCSQCH270J50 |
| C1280 | CCSQCH331J50 |
| C1322, C1324 | CCSQCH681J50 |
| C1403, C1404 | CCSQSL681J50 |
| C1102, C1104, C1203, C1233, C1240 | CEJA101M10 |
| C1242, C1249, C1411, C1602 | CEJA101M10 |
| C1301, C1307, C1308, C7003 | CEJA101M16 |
| C1405, C1406 | CEJA2R2M50 |
| C1109, C1110 | CEJA330M25 |
| C1238 | CEJAR47M50 |
| C1331 | CKSQYB102K50 |
| C1204–C1206, C1237, C1253, C1271 | CKSQYB103K50 |
| C1416, C1605 | CKSQYB103K50 |
| C1245 | CKSQYB104K25 |
| C1236 | CKSQYB152K50 |
| C1231 | CKSQYB332K50 |
| C1341, C1342 | CKSQYB333K50 |
| C1235, C1321, C1323 | CKSQYB473K50 |
| C1311, C1312 | CKSQYB681K50 |
| C1332 | CKSQYB682K50 |
| C1101, C1103, C1108, C1111, C1232 | CKSQYF103Z50 |
| C1234, C1241, C1250, C1251, C1276 | CKSQYF103Z50 |
| C1302–C1306, C1413, C1414, C1417 | CKSQYF103Z50 |
| C1601, C1603 | CKSQYF103Z50 |
| C7001, C7002 | CKSQYF104Z50 |

RESISTORS

| | |
|-----------------|-------------|
| R7003 | RD1/4PU181J |
| R7007 | RD1/4PU221J |
| R7006 | RD1/4PU331J |
| R7005 | RD1/4PU470J |
| Other Resistors | RS1/10S□□□J |

OTHERS

| | | |
|------------|---------------------|-------------|
| 111 | (3P CABLE HOLDER) | 51048-0300 |
| 101 | (12P CABLE HOLDER) | 51048-1200 |
| CN110 | (17P FFC CONNECTOR) | 52044-1745 |
| CN1101 | (16P FFC CONNECTOR) | 52089-1620 |
| J111 | (3P FLAT CABLE) | D20PYY0310E |
| J101 | (12P FLAT CABLE) | D20PYY1215E |
| X1201 | (16.9344MHz) | PSS1008 |
| CN1301 | (6P CONNECTOR) | S6B-ZR |
| 1001, 1002 | (PCB BINDER) | VEF1040 |

FRONT PANEL ASSY SEMICONDUCTORS

| | |
|--------------|----------|
| Q5901 | DTA143EK |
| Q5902, Q5903 | DTC124EK |
| D5902, D5903 | 1SS133 |
| D5908 | 1SS355 |
| D5901 | MTZJ5.6B |

| | |
|-------|------------|
| D5907 | SLR- 343VC |
|-------|------------|

SWITCHES AND RELAYS

| | |
|--------------------------|---------|
| S5916 | ASX7026 |
| S5901–S5915, S5917–S5923 | XSG3001 |

| Mark | No. | Description | Part No. |
|------|-----|-------------|----------|
|------|-----|-------------|----------|

CAPACITORS

| | |
|-------|--------------|
| C5902 | CEJA101M10 |
| C5903 | CKSQYF103Z50 |

RESISTORS

| | |
|-----------------|-------------|
| R5917 | RD1/2PM471J |
| R5909 | RD1/2PM820J |
| Other Resistors | RS1/10S□□□J |

OTHERS

| | |
|---------------------------------|-------------|
| 152, 154, 155 (3P CABLE HOLDER) | 51048-0300 |
| CN150 (17P FFC CONNECTOR) | 52044-1745 |
| CN51 (3P JUMPER CONNECTOR) | 52147-0310 |
| J54 (3P FLAT CABLE) | D20PYY0310E |
| J52 (3P FLAT CABLE) | D20PYY0320E |
| J55 (3P FLAT CABLE) | D20PYY0330E |
| 5901 (REMOTE RECIVE UNIT) | GP1U27X |

I F-TERMINAL ASSY SEMICONDUCTORS

| | |
|--------------|--------|
| D7211, D7212 | 1SS355 |
|--------------|--------|

COILS AND FILTERS

| | |
|----------------------------|---------|
| L7202, L7203, L7211, L7212 | VTL1096 |
| L7221, L7222 | VTL1096 |
| L7241 | VTL1105 |

CAPACITORS

| | |
|----------------------------|--------------|
| C7202 | CEJA101M10 |
| C7213, C7214, C7223, C7224 | CKSQYB102K50 |
| C7201, C7203 | CKSQYB103K50 |
| C7231 | CKSQYB472K50 |
| C7202 | CCSQCH270J50 |

RESISTORS

| | |
|---------------|-------------|
| All Resistors | RS1/10S□□□J |
|---------------|-------------|

OTHERS

| | |
|---------------------------|-----------------|
| 103 (9P CABLE HOLDER) | 51063-0905 |
| 7304 (MINE JACK) | AKN-210 |
| 7303 (MINI JACK) | AKN7003 |
| J103 (JUMPER WIRE) | D15A09-350-2651 |
| JA7202 (OPTICAL LINK OUT) | GP1F32R |

H R-TERMINAL ASSY COILS AND FILTERS

| | |
|-------------|---------|
| L7101–L7106 | VTL1096 |
| L7111 | VTL1105 |

CAPACITORS

| | |
|--------------|--------------|
| C7102, C7104 | CCSQCH221J50 |
| C7154 | CKSQYB472K50 |
| C7131 | CKSQYB103K50 |

RESISTORS

| | |
|---------------|-------------|
| All Resistors | RS1/10S□□□J |
|---------------|-------------|

OTHERS

| | |
|----------------------|------------|
| JA7105 (2P PIN JACK) | AKB7043 |
| CN7104 (4P PIN JACK) | AKB7114 |
| CN7102 (5P SOCKET) | AKP7042 |
| CN7101 (10P SOCKET) | AKP7048 |
| CN131 (10P SOCKET) | KP200IB10L |
| CN132 (12P SOCKET) | KP200IB12L |

| Mark | No. | Description | Part No. |
|----------|----------------------------------|----------------------------|---------------|
| G | | CD MOTOR ASSY | |
| | | CAPACITORS | |
| | C7501 | | CKSQYF104Z50 |
| | | OTHERS | |
| | CN11 | (3P JUMPER CONNECTOR) | 52151-0310 |
| O | | CD OPEN SW ASSY | |
| | | SWITCHES AND RELAYS | |
| | S7401, S7402 | | VSH1019 |
| | | OTHERS | |
| | 54 | (3P CABLE HOLDER) | 51048-0300 |
| P | | CD CLOSE SW ASSY | |
| | | SWITCHES AND RELAYS | |
| | S7403, S7404 | | ASG7015 |
| | | OTHERS | |
| | 55 | (3P CABLE HOLDER) | 51048-0300 |
| N | | LIGHT-L ASSY | |
| | | SEMICONDUCTORS | |
| | D5971 | | NSPBF50S-8451 |
| | | OTHERS | |
| | 51 | (3P CABLE HOLDER) | 51048-0300 |
| | J51 | (3P CABLE HOLDER) | D20PYY0310E |
| Q | | MD FLAP SW ASSY | |
| | | SWITCHES AND RELAYS | |
| | S4901 | | ASG7009 |
| | | OTHERS | |
| | 52 | (3P CABLE HOLDER) | 51048-0300 |
| B | | TX CONNECT ASSY | |
| | | CAPACITORS | |
| | C9999 | | CKSQYB104K25 |
| | | OTHERS | |
| | 160 | (13P CABLE HOLDER) | 51048-1300 |
| | CN161 | (14P CONNECTOR) | 9176B-14L |
| C | | U-COM ASSY | |
| | | SEMICONDUCTORS | |
| | IC5502 | | BU1923F |
| | IC5501 | | PDG241B |
| | Q5701, Q5751 | | 2SA1037K |
| | Q5501 | | 2SC2412K |
| | Q5502, Q5702, Q5752 | | DTC124EK |
| | Q5503 | | DTC143EK |
| | D5501, D5503–D5505, D5511, D5512 | | 1SS133 |
| | D5701 | | 1SS133 |
| | D5506 | | MTZJ6.8B |
| | | COILS AND FILTERS | |
| | L5751 | | LAU1R0J |
| | L5501, L5511, L5562 | | LAU220J |
| | L5551–L5554 | | VTL1105 |

| Mark | No. | Description | Part No. |
|----------|---------------------------|--------------------------|--------------|
| | | CAPACITORS | |
| | C5507 (0.047F/5.5V) | | ACH1246 |
| | C5521–C5524 | | CCSQCH100D50 |
| | C5753, C5754 | | CCSQCH270J50 |
| | C5751 | | CCSQCH271J50 |
| | C5755 | | CCSQCH561J50 |
| | C5509, C5752 | | CEAT100M50 |
| | C5502 | | CEAT1R0M50 |
| | C5757 | | CEAT330M16 |
| | C5505, C5508, C5517 | | CEAT470M16 |
| | C5501 | | CEATR47M50 |
| | C5503, C5562 | | CKSQYB102K50 |
| | C5531–C5533, C5756, C5758 | | CKSQYB103K50 |
| | C5504, C5506, C5511–C5516 | | CKSQYF104Z50 |
| | | RESISTORS | |
| | Other Resistors | | RS1/10S□□□J |
| | | OTHERS | |
| | 60 | (13P CABLE HOLDER) | 51048-1300 |
| | CN10 | (17P FFC CONNECTOR) | 52044-1745 |
| | CN105 | (23P FFC CONNECTOR) | 52044-2345 |
| | CN70 | (15P FFC CONNECTOR) | 52045-1345 |
| | CN50 | (17P FFC CONNECTOR) | 52045-1745 |
| | CN40 | (15P JUMPER CONNECTOR) | 52147-1510 |
| | | (BUZZER) | APV7002 |
| | J60 | (13P FLAT CABLE) | D20PYY1315E |
| | | (PCB BINDER) | VEF1040 |
| | KN5501 | (EARTH METAL FITTING) | VNF1084 |
| D | | LCD ASSY | |
| | | OTHERS | |
| | CN190 | (15P FFC CONNECTOR) | 52045-1545 |
| | CN180 | (29P FFC CONNECTOR) | 52045-2945 |
| | V5501 | (LCD DISPLY) | AAV7066 |
| L | | MD ASSY | |
| | | SEMICONDUCTORS | |
| | IC4301 | | AK4520A |
| | IC4201, IC4202 | | NJM4558MD |
| | IC4601 | | TC74HC00AF |
| | IC4151 | | TC74HCT08AF |
| | Q4003 | | 2SC1740S |
| | Q4201–Q4203 | | 2SC2412K |
| | Q4002 | | 2SD1858X |
| | Q4251, Q4252 | | 2SD2114K |
| | Q4253 | | DTA124EK |
| | D4201–D4203 | | 1SS133 |
| | D4204, D4251 | | DAP202K |
| | D4004 | | MTZJ3.6B |
| | D4003 | | MTZJ5.6B |
| | D4101 | | S5688G |
| | | COILS AND FILTERS | |
| | F4106–F4109 | | ATF1108 |
| | F4101 | | ATF1110 |
| | F4102 | | ATF7021 |
| | F4103–F4105 | | ATF7022 |
| | L4301, L4302 | | LAU100J |

| Mark | No. | Description | Part No. |
|------|----------------------------------|-------------|----------|
| | L4105, L4602 | | LAU220J |
| | L4133 | | LAU2R2J |
| | L4111, L4112, L4114, L4115 | | VTL1105 |
| | L4117–L4120, L4131, L4132, L4311 | | VTL1105 |

CAPACITORS

| | |
|-----------------------------------|--------------|
| C4124, C4319 | CCSQCH101J50 |
| C4141, C4205, C4206, C4212 | CCSQCH220J50 |
| C4606 | CCSQCH470J50 |
| C4201, C4202, C4207, C4208, C4211 | CEAT100M50 |
| C4213, C4251, C4252, C4609, C4610 | CEAT100M50 |
| C4302, C4306, C4308 | CEAT101M10 |
| C4215 | CEAT101M16 |
| C4214 | CEAT220M25 |
| C4131 | CEAT221M10 |
| C4292 | CEAT221M16 |
| C4605 | CEAT470M10 |
| C4006, C4007, C4108 | CEAT470M16 |
| C4312, C4314 | CEAT4R7M50 |
| C4110 | CKSQYB102K50 |
| C4109, C4111, C4121, C4216, C4304 | CKSQYB103K50 |
| C4310, C4317, C4318, C4601–C4604 | CKSQYB103K50 |
| C4101, C4102, C4106, C4107 | CKSQYB104K25 |
| C4122, C4123, C4125, C4127, C4132 | CKSQYB104K25 |
| C4309, C4323 | CKSQYB104K25 |
| C4315, C4316 | CKSQYB222K50 |
| C4301, C4303, C4305, C4307, C4311 | CKSQYF104Z50 |
| C4313 | CKSQYF104Z50 |

RESISTORS

| | |
|---------------|-------------|
| All Resistors | RS1/10S□□□J |
|---------------|-------------|

OTHERS

| | | |
|--------|---------------------|-------------|
| 102 | (8P CABLE HOLDER) | 51048-0800 |
| 104 | (10P CABLE HOLDER) | 51048-1000 |
| J102 | (8P FLAT CABLE) | D20PYY0825E |
| J104 | (10P FLAT CABLE) | D20PYY1040E |
| J140 | (15P FLAT CABLE) | D20PYY1525E |
| X5501 | (12MHz) | ASS1062 |
| X5751 | (4.332MHz) | ASS7004 |
| CN4101 | (30P FFC CONNECTOR) | VKN1206 |

J MD CORE MAIN ASSY SEMICONDUCTORS

| | |
|------------|----------------|
| IC112 | BA4510F |
| IC116 | BD7910FV |
| IC110 | BR93LC56F |
| IC101 | IR3R55M |
| IC102 | LR376487 |
| IC106 | M56758FP |
| IC103 | M5M4V4400CTP-7 |
| IC104 | PD5523A |
| IC114 | RN5RG32AA |
| IC109 | TC74VHC08FT |
| Q102 | 2SA1036K |
| Q101 | 2SB1188 |
| Q103, Q104 | DTC124EU |
| D101, D102 | SB02-09CP |



| Mark | No. | Description | Part No. |
|------|--------------------------------|-------------|----------|
| | L101, L103, L104, L107 (4.7μH) | | DTL1024 |
| | L110 | | QTL1015 |
| | L108 (47μH) | | RTL1003 |
| | L102 (0.47μH) | | RTL1007 |

SWITCHES AND RELAYS

| | |
|------------|---------|
| S101, S102 | RSF1012 |
|------------|---------|

CAPACITORS

| | |
|------------------------------|--------------|
| C115, C146 | CCSQCH101J50 |
| C119, C120 | CCSQCH120J50 |
| C141–C144, C155 | CCSQCH220J50 |
| C174–C178 | CCSQCH271J50 |
| C194 | CCSQCH331J50 |
| C139 | CEV101M4 |
| C166 | CEV101M6R3 |
| C147, C148, C201 | CEV470M6R3 |
| C112 | CEV4R7M35 |
| C1000, C199 | CKSQYB103K50 |
| C129 | CKSQYB122K50 |
| C153, C154 | CKSQYB153K50 |
| C158 | CKSQYB222K50 |
| C196–C198 | CKSQYB223K50 |
| C103, C145 | CKSQYB273K50 |
| C171 | CKSQYB332K50 |
| C149, C170 | CKSQYB333K50 |
| C106, C159 | CKSQYB472K50 |
| C156, C157 | CKSQYB562K50 |
| C151, C152, C160, C162 | CKSQYB821K50 |
| C132, C134, C137, C138, C161 | CKSQYF104Z25 |
| C163, C164, C195, C202–C205 | CKSQYF104Z25 |
| C101, C102, C104, C108 | CKSQYF105Z16 |
| C113, C114, C116–C118 | CKSQYF105Z16 |
| C121, C122, C124, C135, C136 | CKSQYF105Z16 |
| C140, C165, C169, C207, C208 | CKSQYF105Z16 |
| C123 | CKSQYF473Z25 |
| C105, C107 | CKSQYF474Z16 |

RESISTORS

| | |
|-----------------|-------------|
| R105 | RS1/8S270J |
| Other Resistors | RS1/10S□□□J |

OTHERS

| | |
|-----------------------|---------------|
| CN104 (30P CONNECTOR) | RKN1039 |
| X101 (33.8688MHz) | RSS1055 |
| CN105 (3P CONNECTOR) | S2B-ZR-SM3A |
| CN102 (3P CONNECTOR) | S2B-ZR-SM3A-R |
| CN101 (28P CONNECTOR) | SFV28R-1ST |
| CN103 (7P CIONNECTOR) | SFW7R-2ST |

K MD CORE SW ASSY SWITCHES AND RELAYS

| | |
|------|---------|
| S701 | RSF1009 |
| S702 | RSF1010 |

RESISTORS

| | |
|---------------|-------------|
| All Resistors | RS1/10S□□□J |
|---------------|-------------|

OTHERS

| | |
|----------------------|-----------|
| CN701 (7P CONNECTOR) | SFW7R-1ST |
|----------------------|-----------|

6. ADJUSTMENT

6.1 MD SECTION

■ JIGS AND MEASURING INSTRUMENTS

- Thermometer

- Oscilloscope

- Optical Power Meter

- Jitter Meter

- Test Disc

For servo system adjustment GGF1328 (MMD-212)

For recording/playback inspection GGF1328 (MMD-212), GGF1277,
TGYS1 (or MMD-110), Commercial discs

6.1.1 NECESSARY ADJUSTMENT POINTS

| When | | Adjustment points |
|---|---|--------------------------|
| Exchange PICKUP | ➡ | ② - ⑧ → Pages 59 - 64 |
| Exchange Servo Base Assy (SPINDLE MOTOR) | ➡ | ③ - ⑧ → Pages 60 - 64 |
| Exchange MD CORE MAIN UNIT | ➡ | ①, ④ - ⑧ → Pages 59 - 64 |
| Exchange MD HEAD | ➡ | ⑧ → Pages 64 |
| Exchange Loading Mechanism Assy | ➡ | _____ |
| Exchange Servo Mechanism Assy | ➡ | ③ - ⑧ → Pages 60 - 64 |
| Exchange MD Mechanism Assy (Loading Mechanism Assy + Servo Mechanism Assy) | ➡ | ③ - ⑧ → Pages 60 - 64 |

6.1.2 TEST MODE

For adjustment, use the stereo power amplifier (M-IS21T).

(1) How to Start / Cancel Test Mode (Mechanism Assy Adjustment Mode)

TEST MODE : ON

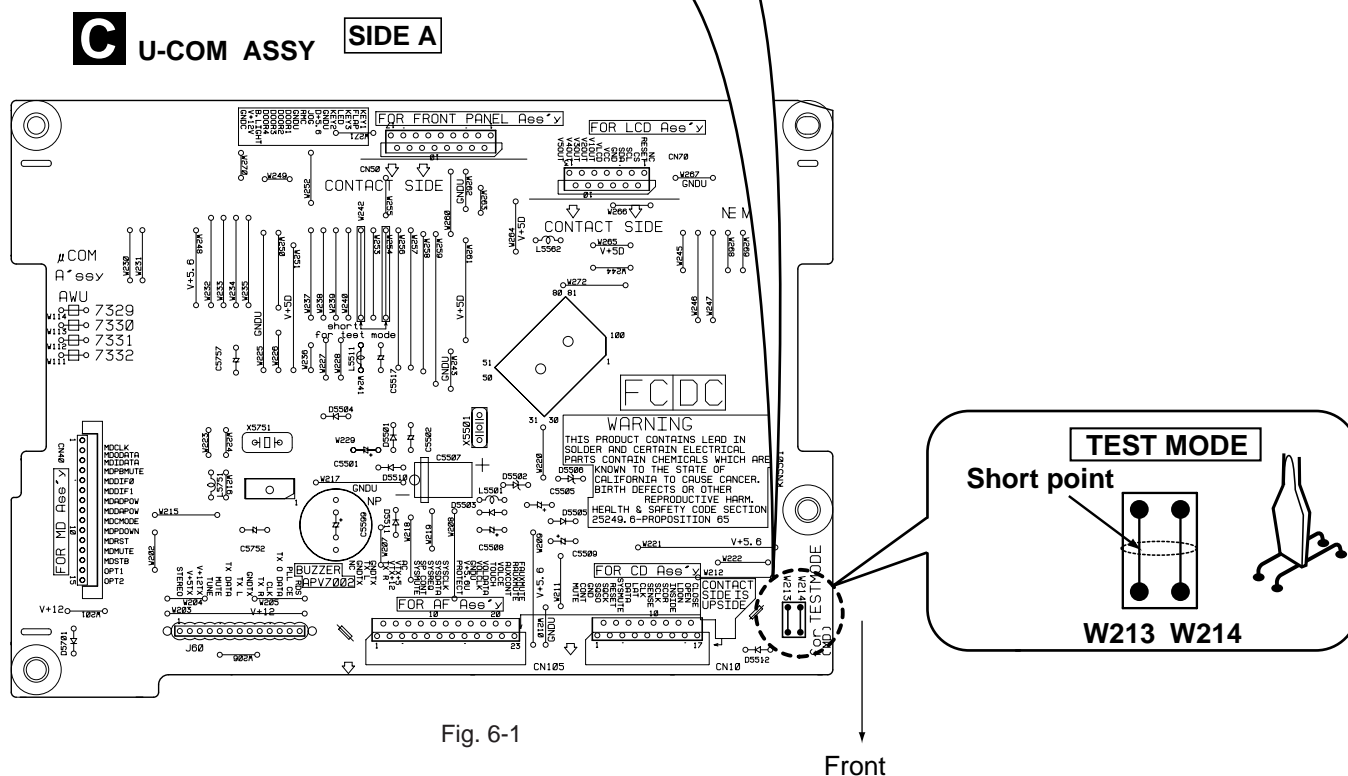
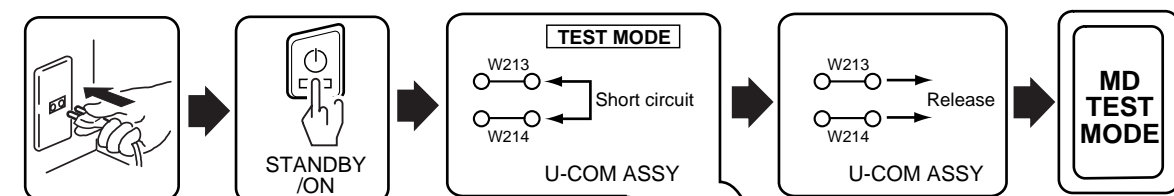
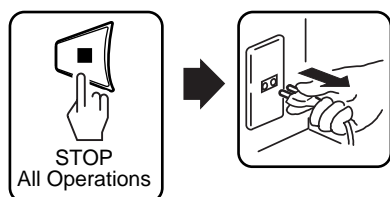


Fig. 6-1

TEST MODE : STOP → CANCEL



6.1.3 MD Mechanism Assy Adjustment and Check

① Temperature Check (Please perform this check soon after the power has been switched on.)

Note: When IC101 (RF-AMP) or IC104 (mechanical controller) has been exchanged or when a correction changing VD+3 has been made, be sure to correctly perform all steps up to step 6.

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks | | | | | | | | | | | | |
|--------------------------------|---|--|---|---------------------|--------------------------------|-----------------|--------------|----------|--------------|---------|--------------|----------|--------------|---------|--------------|----------|
| 1 | Short circuit MECH TEST MODE during the power ON. (Fig.6-1) | EJECT | Test mode | | | | | | | | | | | | | |
| 2 | Press the REC key. | TEMP ○○□□ | The microcomputer starts measuring. | ○○: Measuring value | | | | | | | | | | | | |
| 3 | When □□ is 80 or more at this time, the adjustment is OK (step 4 and following can be omitted). | | End | □□: Set value | | | | | | | | | | | | |
| When □□ is 80 (not passed) | | TEMP ○○ 8 0 | 80 is the default value (unadjusted). | | | | | | | | | | | | | |
| 4 | Measure the ambient temperature T (°C) and check that the measuring value (○○) is within the standard in regard to the microcomputer set value (□□). Note: When the indication of the measuring value (○○) is not stable, and the ambient temperature T (°C) is 25 °C or less, set to the lower value. When the ambient temperature is over 25 °C, set to the higher value. | <div style="text-align: center;">TEMP ○○□□</div> <div style="display: flex; justify-content: space-around;">μ-com Measuring value ↑μ-com Set value ↑</div> <table border="1" style="margin: 10px auto;"><thead><tr><th>Room Temperature [T (°C)]</th><th>hex= (○○-□□)</th></tr></thead><tbody><tr><td>11.6 to 16.9</td><td>+1 to +3</td></tr><tr><td>17.0 to 22.3</td><td>0 to +2</td></tr><tr><td>22.4 to 27.6</td><td>-1 to +1</td></tr><tr><td>27.7 to 33.0</td><td>0 to -2</td></tr><tr><td>33.1 to 38.4</td><td>-1 to -3</td></tr></tbody></table> <div style="display: flex; align-items: center; justify-content: flex-end; margin-top: 10px;"><div style="text-align: right; margin-right: 10px;">When the microcomputer value is</div><div style="text-align: center;"><div style="display: flex; flex-direction: column; align-items: center;"><div>79</div><div>↑ -</div><div>7A</div><div>7B</div><div>7C</div><div>↓ +</div><div>7D</div></div></div></div> | | | Room Temperature [T (°C)] | hex= (○○-□□) | 11.6 to 16.9 | +1 to +3 | 17.0 to 22.3 | 0 to +2 | 22.4 to 27.6 | -1 to +1 | 27.7 to 33.0 | 0 to -2 | 33.1 to 38.4 | -1 to -3 |
| Room Temperature [T (°C)] | hex= (○○-□□) | | | | | | | | | | | | | | | |
| 11.6 to 16.9 | +1 to +3 | | | | | | | | | | | | | | | |
| 17.0 to 22.3 | 0 to +2 | | | | | | | | | | | | | | | |
| 22.4 to 27.6 | -1 to +1 | | | | | | | | | | | | | | | |
| 27.7 to 33.0 | 0 to -2 | | | | | | | | | | | | | | | |
| 33.1 to 38.4 | -1 to -3 | | | | | | | | | | | | | | | |
| 5 | Change □□ with the F. SKIP key (UP) and the R.SKIP key (DOWN). | TEMP 7B 7B | | | | | | | | | | | | | | |
| 6 | Power OFF | EEPROMW | Writing to EEPROM is made and return is made automatically from test mode to normal mode. | | | | | | | | | | | | | |

② Laser Power Check

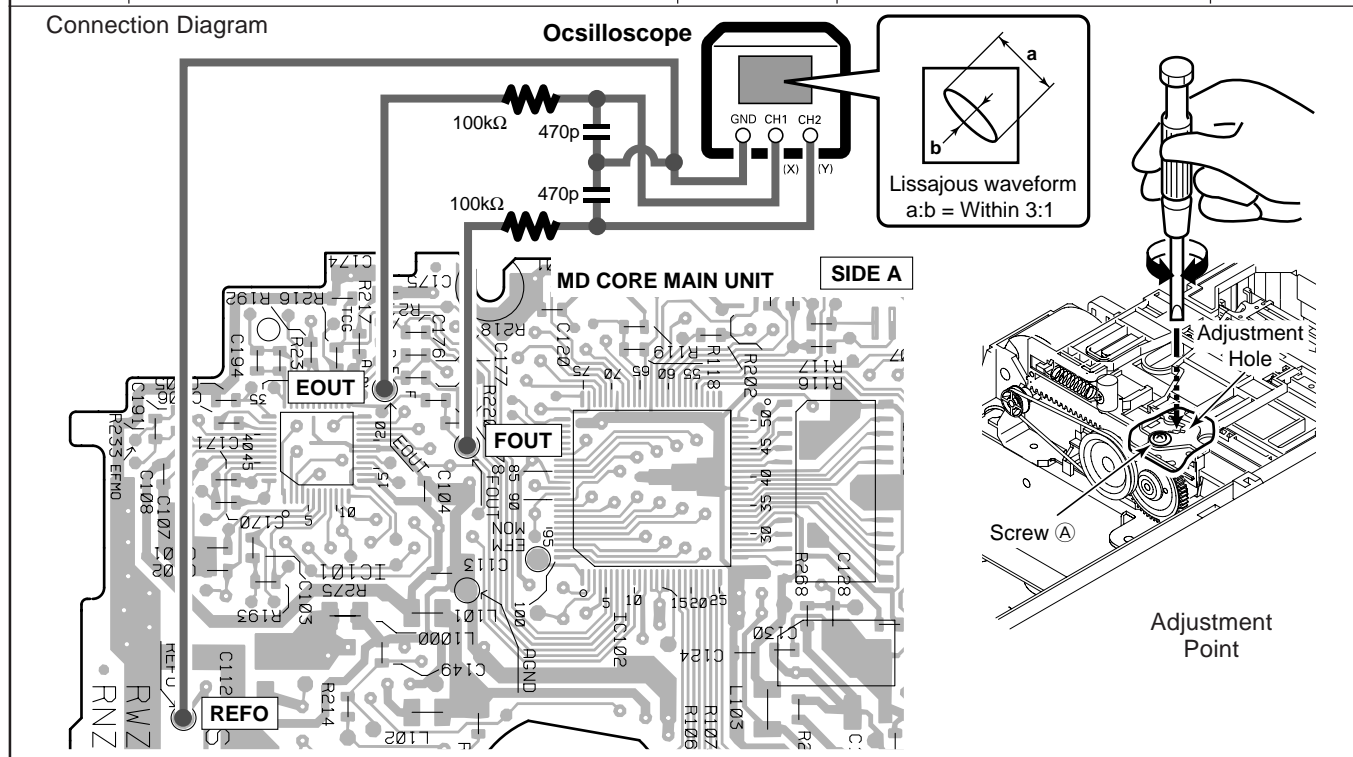
CAUTION

- Never look directly at the objective lens. Rec power (rpw) is than ten times greater than Playback power (ppw) is released.
- Never turn the pickup volume and be careful of touch it. Laser power of pickup has been adjusted in the factory shipping.

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks | | | | | | | | |
|--|--|------------|---|--|------------------------|------------|-----------|------------|-----------|------------|-----------|-----------------|
| 1 | Short circuit MECH TEST MODE during the power ON. (Fig6-1) | EJECT | Test mode | Laser Wavelength: 780 nm | | | | | | | | |
| 2 | Press the ENTER key | ppw | PLAY power output status | | | | | | | | | |
| 3 | Measure the laser power with an optical power meter. | ppw | | | | | | | | | | |
| 4 | At this time, check that the measuring value (PLAY power) meets the standard value of the table on the right. Note: When the standard value on the right is applied, the numerical value immediately after entry into test mode 2 shall be taken as the standard. | ppw | <div>TEMP ○○□□</div> <div>μ-com Measuring value ↑ ↑ μ-com Set value</div> <table><tr><td>hex = (○○ - □□)</td><td>Standard Value (mW)</td></tr><tr><td>+02 to +04</td><td>0.69±0.12</td></tr><tr><td>-01 to +01</td><td>0.67±0.1</td></tr><tr><td>-02 to -04</td><td>0.63±0.1</td></tr></table> | hex = (○○ - □□) | Standard Value (mW) | +02 to +04 | 0.69±0.12 | -01 to +01 | 0.67±0.1 | -02 to -04 | 0.63±0.1 | May be omitted. |
| hex = (○○ - □□) | Standard Value (mW) | | | | | | | | | | | |
| +02 to +04 | 0.69±0.12 | | | | | | | | | | | |
| -01 to +01 | 0.67±0.1 | | | | | | | | | | | |
| -02 to -04 | 0.63±0.1 | | | | | | | | | | | |
| 5 | Press the ENTER key. | rpw | REC power output status | | | | | | | | | |
| 6 | At this time, check that the measuring value (REC power) meets the standard value of the table on the right. | rpw | <table><tr><td>hex = (○○ - □□)</td><td>Standard Value (mW)</td></tr><tr><td>+02 to +04</td><td>6.18±0.93</td></tr><tr><td>-01 to +01</td><td>5.79±0.87</td></tr><tr><td>-02 to -04</td><td>5.47±0.82</td></tr></table> | hex = (○○ - □□) | Standard Value (mW) | +02 to +04 | 6.18±0.93 | -01 to +01 | 5.79±0.87 | -02 to -04 | 5.47±0.82 | |
| hex = (○○ - □□) | Standard Value (mW) | | | | | | | | | | | |
| +02 to +04 | 6.18±0.93 | | | | | | | | | | | |
| -01 to +01 | 5.79±0.87 | | | | | | | | | | | |
| -02 to -04 | 5.47±0.82 | | | | | | | | | | | |
| 7 | Press the EJECT key. | | The LD goes out. | | | | | | | | | |

③ Grating Adjustment

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks |
|----------|--|-------------------------|--|---------|
| 1 | Short circuit MECH TEST MODE during the power ON. (Fig.6-1) | EJECT | Test mode | |
| 2 | Insert the test disc GGF1328 (MMD-212). | LOADING GRT AJST | Grating adjustment status | |
| 3 | Press the PLAY key. | LON : LAg : GEG : | Playback is started in tracking open status. (The servo is closed only for focus and spindle.) | |
| 4 | Connect an oscilloscope according to the following connection diagram and loosen the screw (A) at the side of the adjustment hole. Turn the hole with a screwdriver until the Lissajous waveform becomes as shown in the figure, and then tighten the screw (A). | GRT AJST | Lissajous waveform a:b = Within 3:1 | |
| 5 | Press the STOP key. | | Adjustment end | |



④ Preliminary Adjustment

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks |
|----------|---|--|---|---------|
| 3 | Press the NAME key (until AUT YOBI is displayed). | AUT YOBI | Preliminary adjustment mode | |
| 4 | Preliminary adjustment starts when the PLAY key is pressed. | HAo : RFg : PTG : Can't ADJ. COMPLETE | Defective adjustment (problem with the servo system) Adjustment end | |
| 5 | Press the STOP key. | AUT YOBI | Return to menu display | |
| 6 | Power OFF | EEPROM W GGF1328 (MMD-212) | Writing to the EEPROM | |

Note: When this adjustment is performed after defocus adjustment has been performed, defocus is returned to the initial status, and defocus adjustment must be performed.

⑤ Normal adjustment

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks |
|----------|--|---|---|---------|
| 1 | Short circuit MECH TEST MODE during the power ON. (Fig.6-1) | EJECT | Test mode | |
| 2 | Insert the test disc GGF1328 (MMD-212). | LOADING GRT AJST | | |
| 3 | Press the NAME key (until AUTO AJST is displayed). | AUTO AJST | Normal adjustment mode | |
| 4 | Normal adjustment starts when the PLAY key is pressed. | PEG : HAG : Can't ADJ. COMPLETE | Defective adjustment (problem with the servo system) Adjustment end | |
| 5 | Press the STOP key. | AUTO AJST | Return to menu display | |

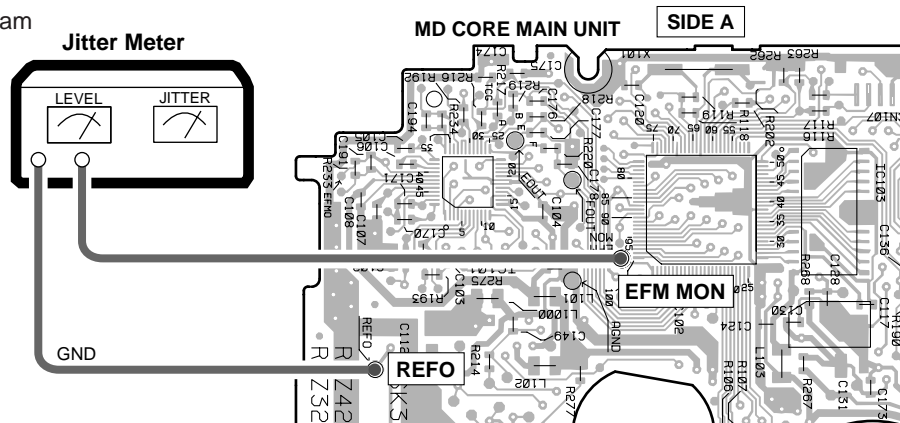
⑥ Defocus adjustment

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks |
|----------|--|--------------------------------|---|---------|
| 1 | Short circuit MECH TEST MODE during the power ON. (Fig.6-1) | EJECT | Test mode | |
| 2 | Insert the test disc GGF1328 (MMD-212). | LOADING GRT AJST | | |
| 3 | Press the NAME key (until deFO AJST is displayed). | deFO AJST | | |
| 4 | Press the PLAY key. <div style="text-align: center;"> of 0000 c 0000 Defocus Value \uparrow \uparrow C1 Error Value </div> | PEG : FESpp : of000c0015 | Defocus mode is entered, and after automatic execution of normal adjustment, the C1 error at the time of focus offset 0 is displayed. | |
| 5 | Check the jitter value and end the adjustment when the intermediate jitter value is 29 nsec or less. | | | |
| 6 | Press the REC key. | of+04 c0032 | The C1 error with application of a focus offset of about 0.4 μ m on the + side is displayed. The jitter value (J+) at this time is recorded. | |

⑥ Defocus adjustment

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks |
|----------|--|---|---|---------|
| 7 | Press the REC key. | of-04 c0020 | The C1 error with application of a focus offset of about 0.4 μm on the – side is displayed. The jitter value (J–) at this time is recorded. | |
| 8 | When J+ is larger than J–, press the REC key and display the C1 error when the focus offset is applied up to +0.4 μm . (Do nothing when J– is larger than J+.) | of+04 c0032 | | |
| 9 | Change the value with the ASEs Key (Up) and the REC MENU key (Down) until the value becomes the same. | of+04 c0032 of+03 c0025 of+02 c0020 | When the smaller offset of the jitter value has been corrected mistakenly, press the ENTER key and return to step 4. | |
| 10 | Press the PLAY key. | COMPLETE | The mean value of the changed set value and the offset of the other setting limit is written into the EEPROM as the compensation offset. | |
| 11 | Power OFF | | Test mode is ended. | |

Connection diagram

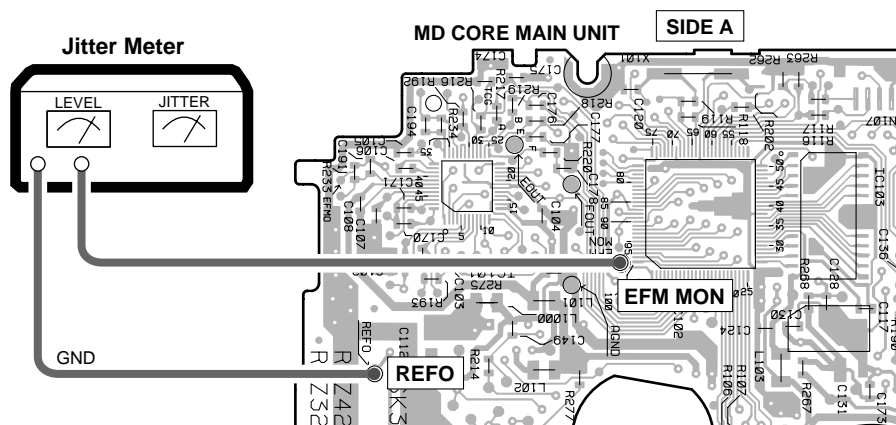


⑦ Jitter/C1 Error Check at the time of Playback

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks | | | | | | |
|----------------------------|--|---------------------------|--|---------------------|-----------------|----------------------------|-----------------|---------------------|-----------------|--|
| 1 | Short circuit MECH TEST MODE during the power ON. (Fig.6-1) | EJECT | Test mode | | | | | | | |
| 2 | Insert the test disc GGF1328 (MMD-212). | LOADING GRT AJST | | | | | | | | |
| 3 | Perform “ ■ Normal Adjustment ” (step 3, step 4). | AUTO AJST | | | | | | | | |
| 4 | Press the REC key. | TEST PLAY | TEST PLAY mode | | | | | | | |
| 5 | Press the ENTER key and display the inner circumference address. | ADRES 0050 | | | | | | | | |
| 6 | Press the PLAY key and display the C1 error for the inner circumference. | a0050 c0015 | Check that the jitter value meets the standard value of the following table. GGF1328 (MMD-212) jitter value <table border="1"><tr><td>Inner circumference</td><td>31 nsec or less</td></tr><tr><td>Intermediate circumference</td><td>29 nsec or less</td></tr><tr><td>Outer circumference</td><td>29 nsec or less</td></tr></table> | Inner circumference | 31 nsec or less | Intermediate circumference | 29 nsec or less | Outer circumference | 29 nsec or less | |
| Inner circumference | 31 nsec or less | | | | | | | | | |
| Intermediate circumference | 29 nsec or less | | | | | | | | | |
| Outer circumference | 29 nsec or less | | | | | | | | | |
| 7 | Press the CHARA key. | A0062 c0013 AVE. c0012 | Seven data are acquired, the largest and the smallest value are discarded, and fixed display is made for the mean value of the remaining five data. Check that this value is 200 or less. | | | | | | | |

⑦ Jitter/C1 Error Check at the time of Playback

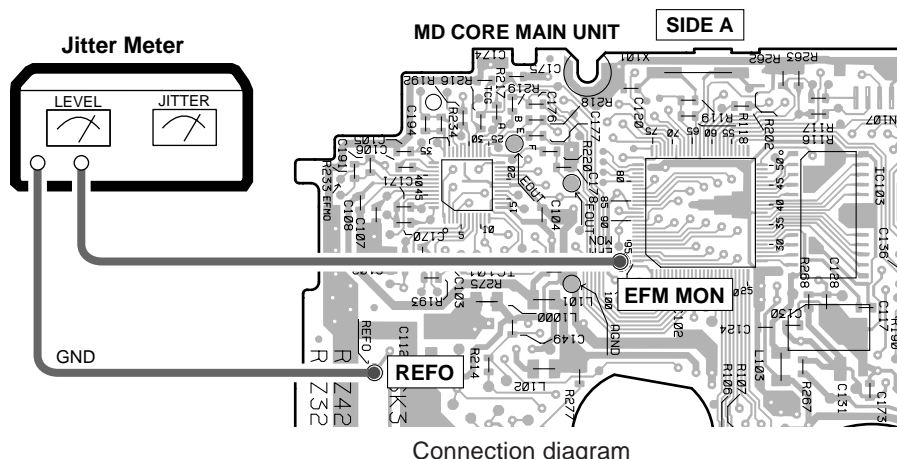
| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks | | | | | | |
|----------------------------|--|---|---|--|-----------------|----------------------------|-----------------|---------------------|-----------------|--|
| 8 | Press the CHARA key. | a006F c0017 | The fixed display of the C1 error is ended. | | | | | | | |
| 9 | Press the STOP key. | TEST PLAY | | | | | | | | |
| 10 | Press the ENTER key and display the inner circumference address. | ADRES 0050 | | Intermediate and outer circumference may be omitted. | | | | | | |
| 11 | Press the REC key and display the intermediate circumference address. Perform steps 6 to 9 in this condition. | ADRES 03C0 a03C0 c0009 TEST PLAY | | | | | | | | |
| 12 | Press the ENTER key and display the inner circumference address. | ADRES 0050 | | | | | | | | |
| 13 | Press the REC key twice to display the outer circumference address. Perform steps 6 to 9 in this condition. | ADRES 0700 a0700 c0008 TEST PLAY | | | | | | | | |
| 14 | Press the EJECT key, eject the test disc GGF1328 (MMD-212), and insert TGYS1 (or MMD-110.) | EJECT LOADING GRT AJST | | | | | | | | |
| 15 | Perform steps 3 to 13 and check the jitter/C1 error with the test disc TGYS1 (or MMD-110). | a0062 c0009 a03d2 c0007 a0712 c0006 | Check that the jitter value meets the standard value of the following table. TGYS1 (or MMD-110) jitter value <table><tr><td>Inner circumference</td><td>29 nsec or less</td></tr><tr><td>Intermediate circumference</td><td>27 nsec or less</td></tr><tr><td>Outer circumference</td><td>27 nsec or less</td></tr></table> | Inner circumference | 29 nsec or less | Intermediate circumference | 27 nsec or less | Outer circumference | 27 nsec or less | |
| Inner circumference | 29 nsec or less | | | | | | | | | |
| Intermediate circumference | 27 nsec or less | | | | | | | | | |
| Outer circumference | 27 nsec or less | | | | | | | | | |
| 16 | Press the EJECT key. | EJECT | The test disc TGYS1 (or MMD-110) is ejected. | | | | | | | |
| 17 | Power OFF | | Test mode is ended. | | | | | | | |



Connection diagram

⑧ Jitter/C1 Error Check at the time of Recording/Playback

| Step No. | Operation Keys and Operation Method | FL Display | Status | Remarks | | | | | | |
|----------------------------|---|---|--|--|-----------------|----------------------------|-----------------|---------------------|-----------------|--|
| 1 | Short circuit MECH TEST MODE during the power ON. (Fig.6-1) | EJECT | Test mode | | | | | | | |
| 2 | Insert the test disc (GGF1277). | LOADING GRT AJST | | | | | | | | |
| 3 | Perform "■ Normal Adjustment " (step 3, step 4). | AUTO AJST | | | | | | | | |
| 4 | Press the REC key twice. | TEST REC | TEST REC mode | | | | | | | |
| 5 | Press the SET ENTER key and display the inner circumference address. | a0050 pw0D | | | | | | | | |
| 6 | When the PLAY key is pressed, TEST REC starts, and when 25 addresses or more have been sent, stop by pressing the STOP key. | a0069 pw0D TEST REC | Note: When the initial address (0050) part of the inner circumference (or intermediate/ outer circumference) has been used 1000 times or more, press the ASES key and shift the address by 10hex. (The address is shifted (up to 10 times) according to the use frequency of the disc.) | Intermediate and outer circumference may be omitted. | | | | | | |
| 7 | Press the ENTER key and display the inner circumference address. | a0050 pw0D | | | | | | | | |
| 8 | Press the REC key and display the intermediate circumference. | a03C0 pw0D | | | | | | | | |
| 9 | Perform step 6. | a03D9 pw0D TEST REC | | | | | | | | |
| 10 | Press the ENTER key and display the inner circumference address. | a0050 pw0D | | | | | | | | |
| 11 | Press the REC key twice and display the outer circumference address. | a0700 pw0D | | | | | | | | |
| 12 | Perform step 6. | a0719 pw0D TEST REC | | | | | | | | |
| 13 | Press the REC key. | TEST PLAY | TEST PLAY mode | | | | | | | |
| 14 | Perform steps 5 to 13 of "■ Jitter/C1 Error Check at the time of Playback ". At the time of self-recording, wait for seven addresses after TEST PLAY start, and then press the CHARA key and enter into mean value mode. (Good recording may not be possible for several addresses at the beginning.) | a0069 c0009 a03D9 c0007 a0719 c0006 | Check the jitter/C2 error at the inner/ intermediate/outer circumference of GGF1277, and check that the jitter value satisfies the standard value of the following table. GGF1277 jitter value <table><tr><td>Inner circumference</td><td>33 nsec or less</td></tr><tr><td>Intermediate circumference</td><td>31 nsec or less</td></tr><tr><td>Outer circumference</td><td>31 nsec or less</td></tr></table> | Inner circumference | 33 nsec or less | Intermediate circumference | 31 nsec or less | Outer circumference | 31 nsec or less | |
| Inner circumference | 33 nsec or less | | | | | | | | | |
| Intermediate circumference | 31 nsec or less | | | | | | | | | |
| Outer circumference | 31 nsec or less | | | | | | | | | |
| 15 | Press the EJECT key. | EJECT | The test disc (GGF1277) is ejected. | | | | | | | |
| 16 | Power OFF | | Test mode is ended. | | | | | | | |



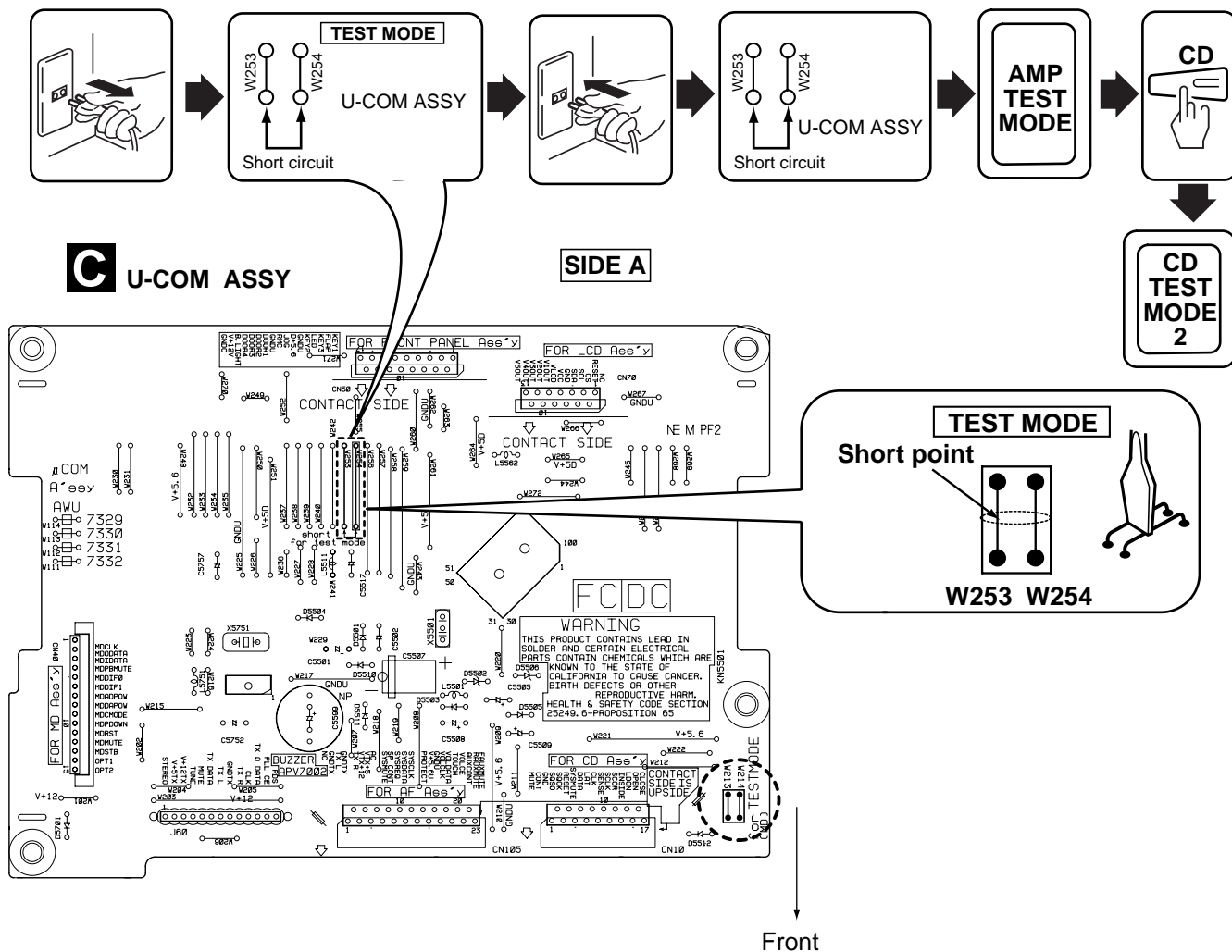
6.2 CD SECTION

For adjustment, use the stereo power amplifier (M-IS21T).

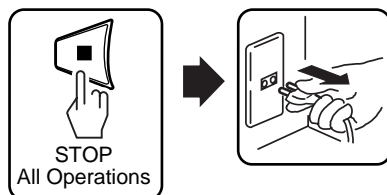
Note : There is no information to be shown in this CD adjustment.

6.2.1 HOW TO START / CANCEL TEST MODE

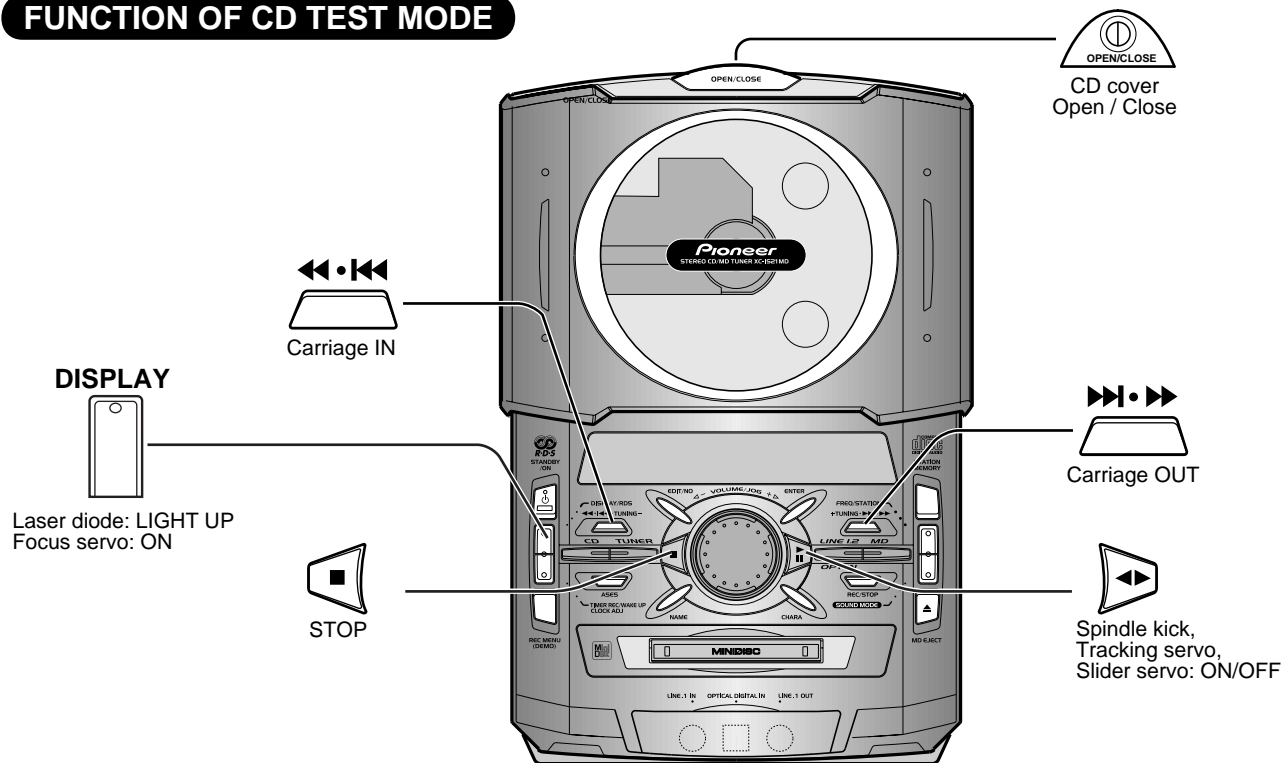
TEST MODE : ON



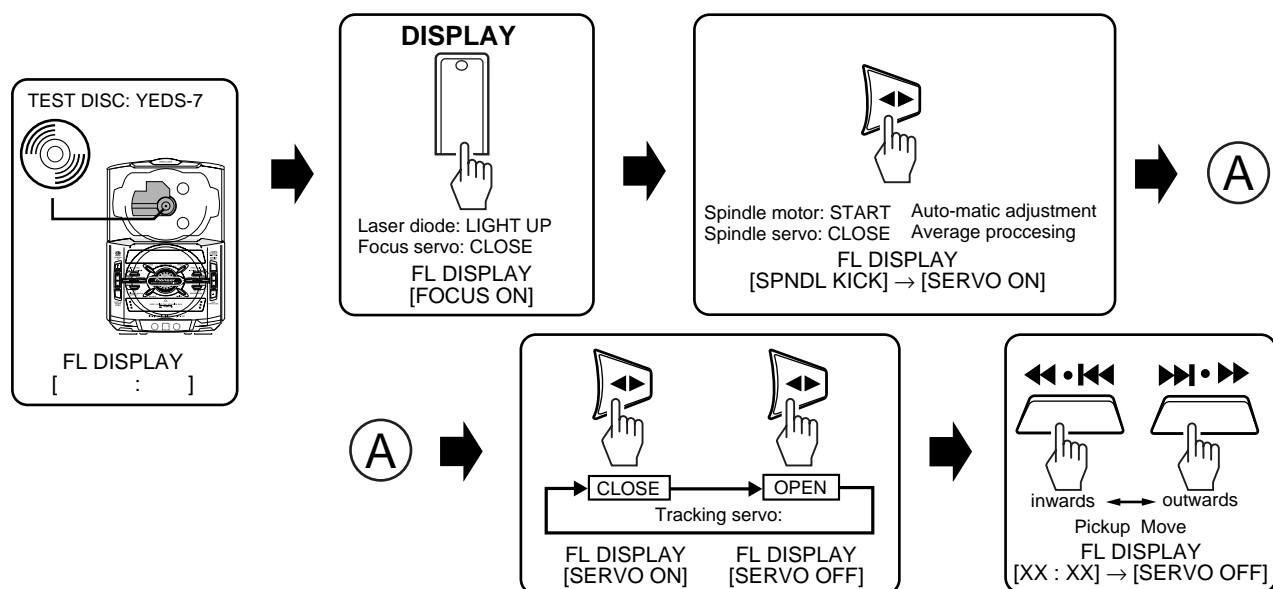
TEST MODE : STOP → CANCEL



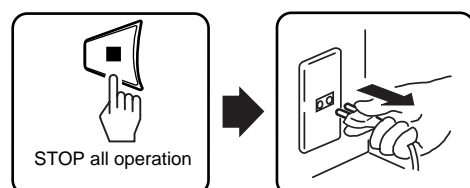
FUNCTION OF CD TEST MODE



TEST MODE : PLAY



TEST MODE : STOP → CANCEL



6.3 TUNER SECTION

6.3.1 FM TUNER SECTION

- Set the mode selector to FM BAND.
- Connect the wiring as shown in Fig. 6-2.

| Step No. | Adjustment Title | FM SG (1kHz, ± 75 kHz dev.) | | Reception Frequency Display | Adjustment Location | Specifications |
|----------|---------------------------|---------------------------------|--------------------|-----------------------------|----------------------------------|---|
| | | Frequency (MHz) | Level (dB μ V) | | | |
| 1 | Front End Sensitivity | 106 | 0 – 30 | 106 MHz | L6104 L6105 L6102 T6101 | Adjust so that the DC voltage between the IC6201-Pin 20 and GND becomes at maximum level. |
| 2 | Stereo Distortion | 98 (ON STEREO) | 80 | 98 MHz | T6101 | Minimize the distortion with 1/8 rotation of the core. |
| 3 | TUNED IND. Lighting Level | 98 | 18 ± 2 | 98 MHz | VR6201 | Adjust so that the indicator of TUNED IND. starts to light up. |

Note: Before adjusting, make sure there is no gap between L6101 and L6102 as well as between L6103 and L6104. If there is a gap between them, bring them into contact with each other first, and then make adjustments.

6.3.2 AM TUNER SECTION

- Set the mode selector to AM BAND.
- Connect the wiring as shown in Fig. 6-2.

| Step No. | Adjustment Title | AM SG (400Hz, 30% Mod.) | | Reception Frequency Display | Adjustment Location | Specifications |
|----------|-----------------------|-------------------------|----------------------|-----------------------------|---------------------|---|
| | | Frequency (kHz) | Level (dB μ V/m) | | | |
| 1 | Front End Sensitivity | 999*1 | 35 – 45 | 999 kHz*1 | T6201 | Adjust so that the DC voltage between the IC6201-Pin 20 and GND becomes at maximum level. |

*1: For the area using 10 kHz step, frequencies should be 1000 kHz.

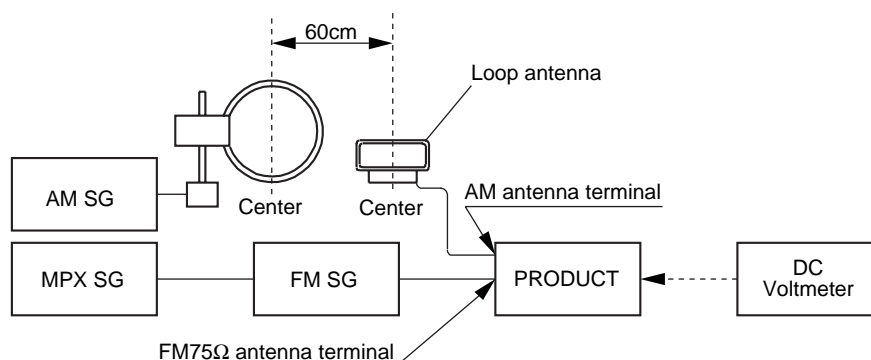


Fig. 6-2 AM and FM Adjustment Wiring Diagram

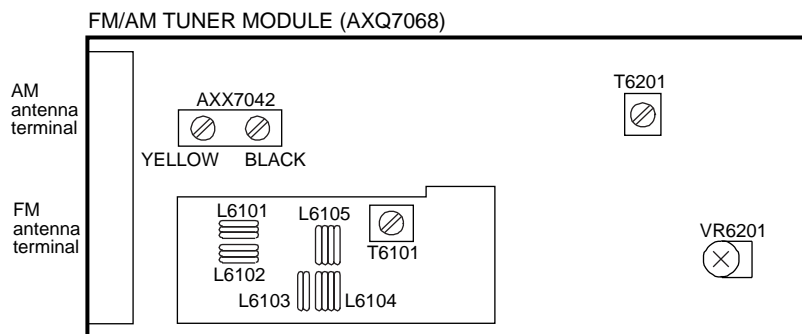


Fig. 6-3 Adjustment Point

7. GENERAL INFORMATION

7.1 PARTS

7.1.1 IC

• The information shown in the list is basic information and may not correspond exactly to that shown in the schematic diagrams.

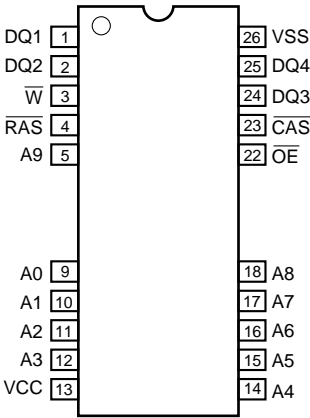
•List of IC

M5M4V4400CTP-7, M56758FP, PD5523A, LR376487, BD7910FV, BR93LC56F, IR3R55M, AK4520A, CXA1821M, CXD2587Q, PDG241B

■ M5M4V4400CTP-7 (CORE MAIN ASSY : IC103)

• DRAM

•Pin Assignment (Top View)

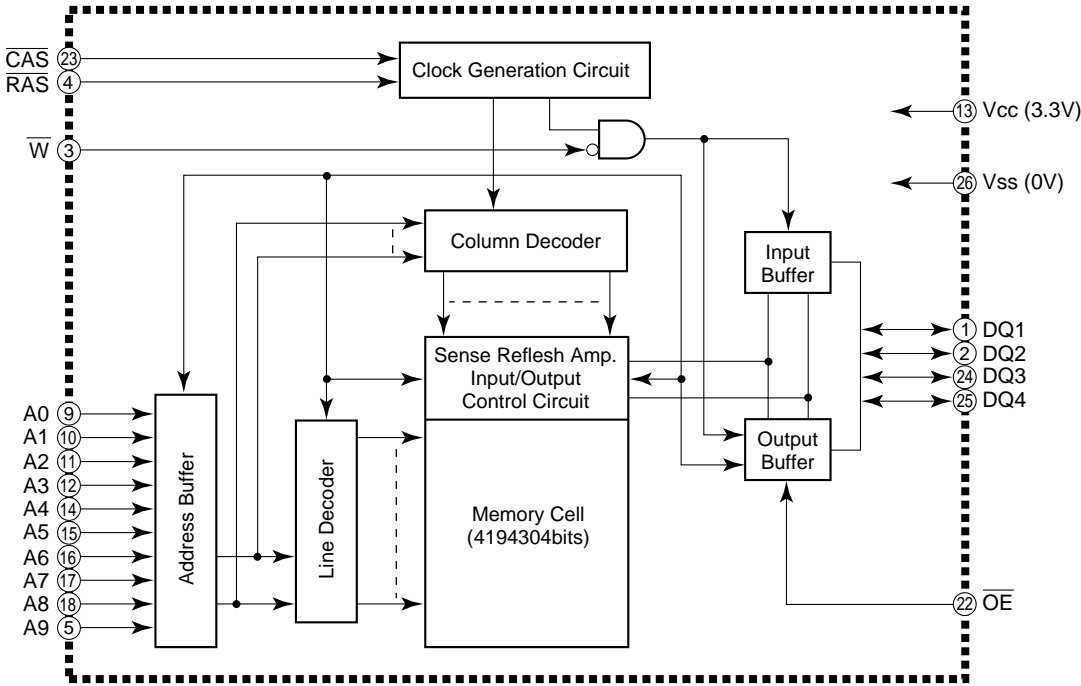


•Pin Function

| No. | Name | Description |
|-----|------------------|---------------------------|
| 1 | DQ1 | Data Input/Output |
| 2 | DQ2 | |
| 3 | \overline{W} | Write control input |
| 4 | \overline{RAS} | Line address strobe input |
| 5 | A9 | Address input |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | A0 | Address input |
| 10 | A1 | |
| 11 | A2 | |
| 12 | A3 | Address input |
| 13 | Vcc | |

| No. | Name | Description |
|-----|------------------|-----------------------------|
| 14 | A4 | Address input |
| 15 | A5 | |
| 16 | A6 | |
| 17 | A7 | |
| 18 | A8 | |
| 19 | A9 | |
| 20 | Vcc | |
| 21 | Vss | |
| 22 | \overline{OE} | Output-enable input |
| 23 | \overline{CAS} | Column address strobe input |
| 24 | DQ3 | Data Input/Output |
| 25 | DQ4 | |
| 26 | Vss | Ground (0 V) |

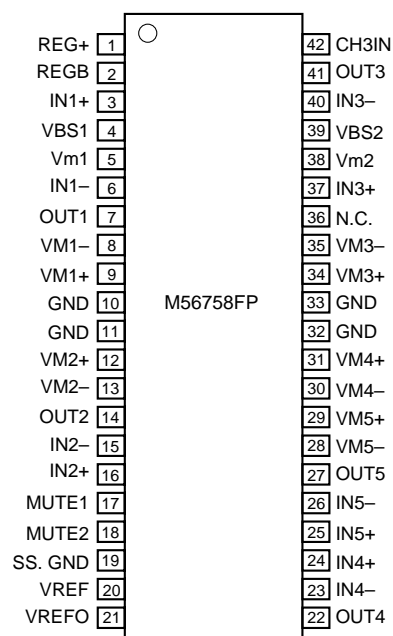
•Block Diagram



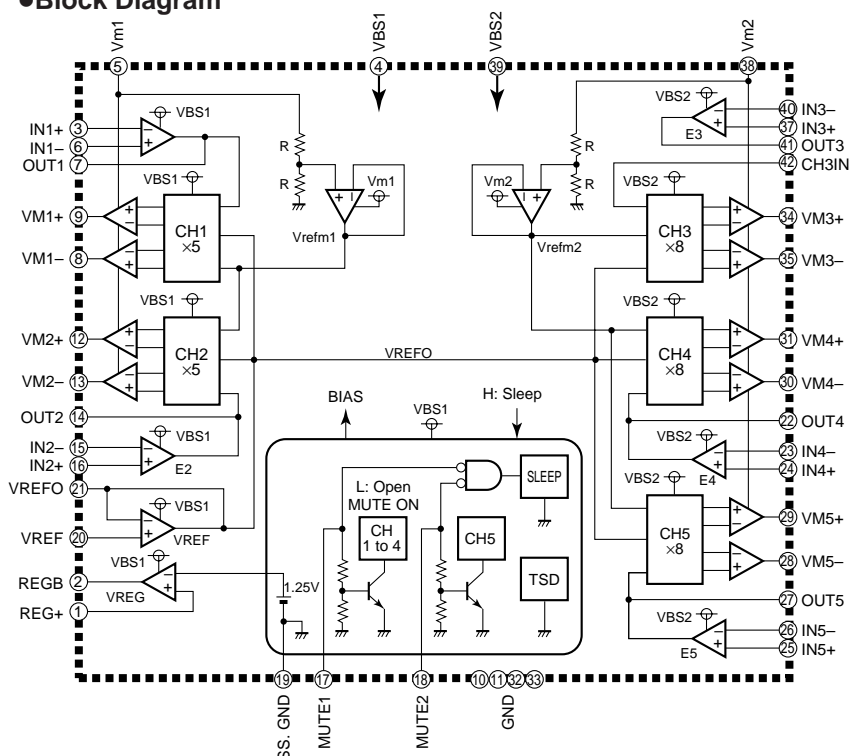
M56758FP (CORE MAIN ASSY : IC106)

• 5-channel Actuator Driver

Pin Assignment (Top View)



Block Diagram



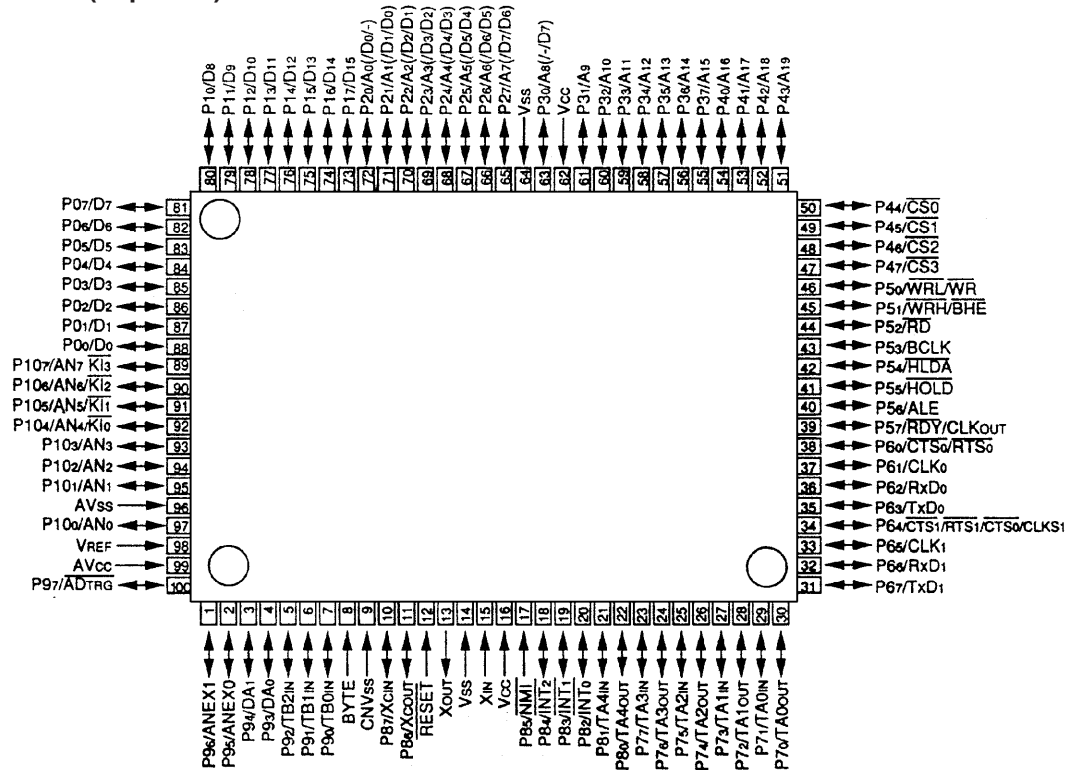
Pin Function

| No. | Name | Description |
|-----|---------|--|
| 1 | REG+ | Regulator voltage setting resistor connection terminal |
| 2 | REGB | Regulator PNP base connection terminal |
| 3 | IN1+ | E1 amplifier nonreversed input terminal |
| 4 | VBS1 | Bootstrap power supply terminal |
| 5 | Vm1 | Motor power supply terminal |
| 6 | IN1- | E1 amplifier reversed input terminal |
| 7 | OUT1 | E1 amplifier output terminal |
| 8 | VM1 (-) | CH1 reversed output terminal |
| 9 | VM1 (+) | CH1 nonreversed output terminal |
| 10 | GND | Motor GND |
| 11 | | |
| 12 | VM2 (+) | CH2 nonreversed output terminal |
| 13 | VM2 (-) | CH2 reversed output terminal |
| 14 | OUT2 | E2 amplifier output terminal |
| 15 | IN2- | E2 amplifier reversed input terminal |
| 16 | IN2+ | E2 amplifier nonreversed input terminal |
| 17 | MUTE1 | Mute terminal (CH1 to CH4) |
| 18 | MUTE2 | Mute terminal (CH5) |
| 19 | SS. GND | Small-signal ground |
| 20 | VREF | Reference voltage input terminal |
| 21 | VREFO | Reference voltage output terminal |

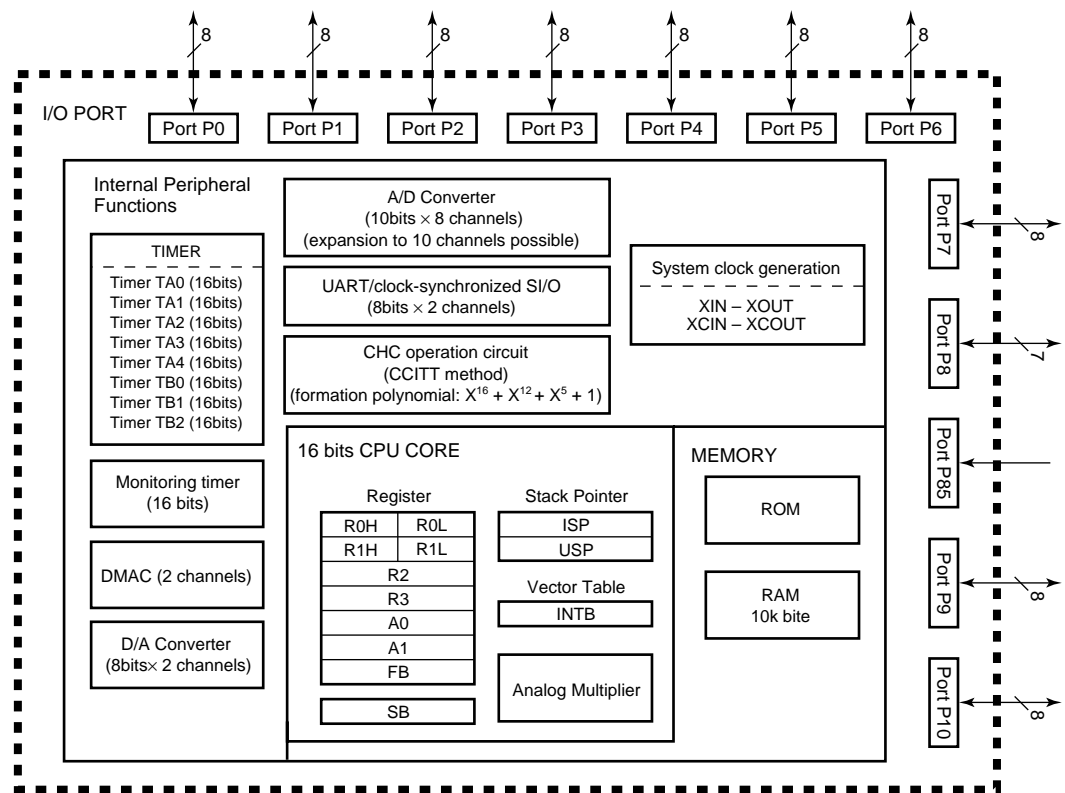
| No. | Name | Description |
|-----|---------|---|
| 22 | OUT4 | E4 amplifier output terminal |
| 23 | IN4- | E4 amplifier reversed input terminal |
| 24 | IN4+ | E4 amplifier nonreversed input terminal |
| 25 | IN5+ | E5 amplifier nonreversed input terminal |
| 26 | IN5- | E5 amplifier reversed input terminal |
| 27 | OUT5 | E5 amplifier output terminal |
| 28 | VM5 (-) | CH5 reversed output terminal |
| 29 | VM5 (+) | CH5 nonreversed output terminal |
| 30 | VM4 (-) | CH4 reversed output terminal |
| 31 | VM4 (+) | CH4 nonreversed output terminal |
| 32 | GND | Motor GND |
| 33 | | |
| 34 | VM3 (+) | CH3 nonreversed output terminal |
| 35 | VM3 (-) | CH3 reversed output terminal |
| 36 | N.C. | Not connected |
| 37 | IN3+ | E3 amplifier nonreversed input terminal |
| 38 | Vm2 | Motor power supply terminal |
| 39 | VBS2 | Bootstrap power supply terminal |
| 40 | IN3- | E3 amplifier reversed input terminal |
| 41 | OUT3 | E3 amplifier output terminal |
| 42 | CH3IN | E3 amplifier nonreversed input terminal |

PD5523A (CORE MAIN ASSY : IC104)

- Mechanism Control microcomputer
- Pin Assignment (Top View)



Block Diagram



●Pin Function

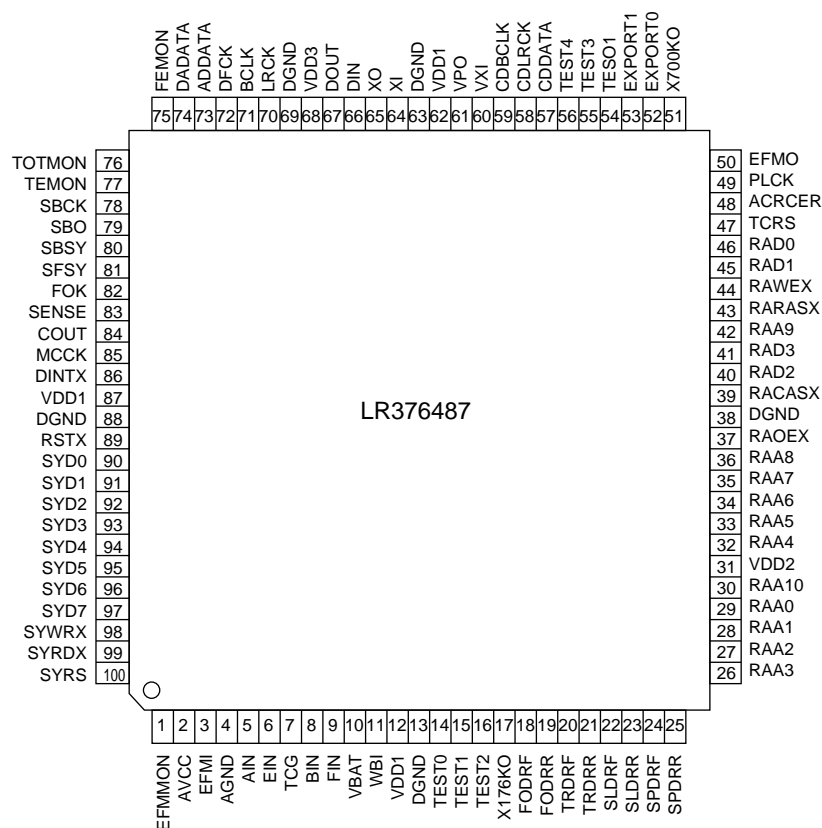
| No. | Name | I/O | Description |
|----------------------------|---|--------------------------------------|--|
| 1 to 7, 100 | P96 to P90, P97 | I/O | These are 8 bit I/O ports with the same functions as P0. By software selection, it functions as the input terminals for the timers B0 to B2, the output terminals for the D/A converter, the expansion input terminals of the A/D converter, or the A/D trigger input terminals. |
| 8 | BYTE | I | This is the terminal for switching the external data bus width. When the level of this terminal is "L", the width is 16 bits, and when it is "H", the width is 8 bits. Please fix it to one of these levels. At the time of single-chip mode, connect it to the Vss terminal. |
| 9 | CNVss | I | This is the terminal for processor mode switching. At the time of single-chip mode or at the time of memory expansion mode, connect it to the Vss terminal. At the time of microprocessor mode, connect it to the Vcc terminal. |
| 10 11 17 18 to 22 | P87 P86 P85 P84 to P80 | I/O I/O I I/O | P80 to P84, P86, and P87 are I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the timer A4 or the input terminals for external interrupt. P86 and P87 function by software selection as the I/O terminals for the subclock oscillation circuit. In this case, connect a crystal oscillator between P86 (XCOUT terminal) and P87 (XCIN terminal). P85 is an input-only port serving also as $\overline{\text{NMI}}$. When the input of this terminal changes from "H" to "L", and $\overline{\text{NMI}}$ interrupt is generated. The $\overline{\text{NMI}}$ function can not be cancelled by software. A pullup resistance can not be set for this terminal. |
| 12 | $\overline{\text{RESET}}$ | I | When the input to this terminal is "L", the microcomputer is reset. |
| 13 | XOUT | I | This are the I/O terminals of the main clock oscillation circuit. Connect a ceramic oscillator or a crystal oscillator between the terminals XIN and XOUT. In case of an externally generated clock, enter the clock from the XIN terminal and leave the XOUT terminal open. |
| 15 | XIN | O | |
| 14 | Vss | — | Impress 0 V. |
| 16 | Vcc | — | Impress 2.7 V to 5.5 V. |
| 23 to 30 | P77 to P70 | I/O | These are 8 bit I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the timers A0 to A3. |
| 31 to 38 | P67 to P60 | I/O | These are 8 bit I/O ports with the same functions as P0. By software selection, they function as the I/O terminals for the UART0 and UART1. |
| 39 to 46 | P57 to P50 | I/O | These are 8 bit I/O ports with the same functions as P0. By software selection, they put out a clock with 1/8 or 1/32 of XIN or with the same cycle as XCIN from P57. |
| | $\overline{\text{WRL}}/\overline{\text{WR}}$, $\overline{\text{WRH}}/\overline{\text{BHE}}$, $\overline{\text{RD}}$, $\overline{\text{BCLK}}$, $\overline{\text{HLDA}}$, $\overline{\text{HOLD}}$, $\overline{\text{ALE}}$, $\overline{\text{RDY}}$ | O O O O O I O I | <p>$\overline{\text{WRL}}$, $\overline{\text{WRH}}$, ($\overline{\text{WR}}$, $\overline{\text{BHE}}$), $\overline{\text{RD}}$, $\overline{\text{BCLK}}$, $\overline{\text{HLDA}}$, and $\overline{\text{ALE}}$ signals are put out. Switching between $\overline{\text{WRL}}$ and $\overline{\text{WRH}}$ and between $\overline{\text{BHE}}$ and $\overline{\text{WR}}$ is possible by software.</p> <p>■ At the time of $\overline{\text{WRL}}$, $\overline{\text{WRH}}$, $\overline{\text{RD}}$ selection When the external data bus width is 16 bits and the $\overline{\text{WRL}}$ signal is at "L" level, writing is done to an even address, and the $\overline{\text{WRH}}$ signal is at "L" level, writing is done to an odd address. Reading is performed when the $\overline{\text{RD}}$ signal is at "L" level.</p> <p>■ At the time of $\overline{\text{WR}}$, $\overline{\text{BHE}}$, $\overline{\text{RD}}$ selection Writing is done when the $\overline{\text{WR}}$ signal is at "L" level. Reading is done when the $\overline{\text{RD}}$ signal is at "L" level. An odd address is accessed when the $\overline{\text{BHE}}$ signal is at "L" level. Please use this mode when the external data bus width is 8 bits. The microcomputer is in hold status while the input level to the $\overline{\text{HOLD}}$ terminal is "L". During hold status, the output from $\overline{\text{HLDA}}$ is at "L" level. $\overline{\text{ALE}}$ is the signal for address latching. The microcomputer is in ready status while the input to $\overline{\text{RDY}}$ is at "L" level. A clock with the same frequency as the internal clock ϕ is put out from the $\overline{\text{BCLK}}$ terminal.</p> |
| 47 to 54 | P47 to P40 | I/O | These are 8 bit I/O ports with the same functions as P0. |
| | $\overline{\text{CS3}}$ to $\overline{\text{CS0}}$, A19 to A16 | O O | The A16 to A19 and $\overline{\text{CS0}}$ to $\overline{\text{CS3}}$ signals are put out. A16 to A19 are the upper 4 bits of the address. $\overline{\text{CS0}}$ to $\overline{\text{CS3}}$ are the chip select signals, and they are used for specification of the access space. |

| No. | Name | I/O | Description |
|-----------------|-----------------------|----------|--|
| 55 to 61, 63 | P37 to P31, P30 | I/O | These are 8 bit I/O ports with the same functions as P0. |
| | A15 to A9, A8 | O | The middle 8 bits (A8 to A15) of the address are put out. |
| | A15 to A9 A8/D7 | I/O O | With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D7) I/O and address (A8) output. Address (A9 to A15) output also is performed. |
| 62 | Vcc | — | Impress 2.7 V to 5.5 V. |
| 64 | Vss | — | Impress 0 V. |
| 65 to 72 | P27 to P20 | I/O | These are 8 bit I/O ports with the same functions as P0. |
| | A7 to A0 | O | Output of the lower 8 bits (A0 to A7) of the address is performed. |
| | A7/D7 to A0/D0 | I/O | With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D0 to D7) I/O and address lower 8 bits (A0 to A7) output. |
| | A0 A7/D6 to A1/D0 | O I/O | With an external data bus width of 16 bits and multiplex bus setting, time sharing is performed for data (D0 to D6) I/O and address (A1 to A7) output. Address (A0) output also is performed. |
| 73 to 80 | P17 to P10 | I/O | These are 8 bit I/O ports with the same functions as P0. |
| | D15 to D8 | I/O | Data (D8 to D15) I/O is performed at the time of separate bus setting. |
| 81 to 88 | P07 to P00 | I/O | These are CMOS 8 bit I/O ports. They have direction registers for I/O selection, and input or output port setting is possible individually for each terminal. For an input port, the existence or absence of a pull-up resistance can be set by software in 4 bit units. |
| | D7 to D0 | I/O | Data (D0 to D7) I/O is performed at the time of separate bus setting. |
| 89 to 95, 97 | P107 to P101, P100 | I/O | This are 8 bit I/O ports with the same functions as P0. By software selection, they function as input terminals of the A/D converter. P104 to P107 also function as input terminals for the key input interrupt function. |
| 96 | AVss | — | This is the A/D converter power supply input terminal. Please connect it to the Vss terminal. |
| 98 | VREF | I | This is the A/D converter reference voltage input terminal. |
| 99 | AVcc | — | This is the A/D converter power supply input terminal. Please connect it to the Vcc terminal. |

■ LR376487 (CORE MAIN ASSY : IC102)

- Encode/Decode/Atrac

●Pin Assignment (Top View)



●Pin Function

| No. | Name | I/O | Description |
|-----|--------|-----|--|
| 1* | EFMMON | O | EFM monitor output |
| 2 | AVCC | – | Analog power supply |
| 3 | EFMI | I | EFM signal input from RF amp |
| 4 | AGND | – | Analog GND |
| 5 | AIN | I | Focus error signal A |
| 6 | EIN | I | Tracking error signal E |
| 7 | TCG | I | Track cross signal |
| 8 | BIN | I | Focus error signal B |
| 9 | FIN | I | Tracking error signal F |
| 10* | VBAT | I | Power-supply voltage detection signal for constant-voltage servo |
| 11 | WBI | I | ADIP wobble signal |
| 12 | VDD1 | – | Digital power supply |
| 13 | DGND | – | Digital GND |
| 14 | TEST0 | I | Test-use input; normally connected to GND when used. |
| 15 | TEST1 | I | |
| 16 | TEST2 | I | Test-use input; Encoder/Servo Mode and ATRAC Mode changeover |

| No. | Name | I/O | Description |
|-----|--------|-----|---|
| 17 | X176KO | O | Clock output; f = 176.4kHz (4fs) |
| 18 | FODRF | O | Focus servo forward output; PWM |
| 19 | FODRR | O | Focus servo reverse output; PWM |
| 20 | TRDRF | O | Tracking servo forward output; PWM |
| 21 | TRDRR | O | Tracking servo reverse output; PWM |
| 22 | SLDRF | O | Slide servo forward output; PWM |
| 23 | SLDRR | O | Slide servo reverse output; PWM |
| 24 | SPDRF | O | Spindle servo forward output or spindle servo output; PWM |
| 25 | SPDRR | O | Spindle servo reverse output or spindle rotation forward/reverse changeover |
| 26 | RAA3 | O | Address output to external D-RAM; ADR3 |
| 27 | RAA2 | O | Address output to external D-RAM; ADR2 |
| 28 | RAA1 | O | Address output to external D-RAM; ADR1 |
| 29 | RAA0 | O | Address output to external D-RAM; ADR0 (LSB) |
| 30* | RAA10 | O | Address output to external D-RAM; ADR10 (MSB) |
| 31 | VDD2 | – | Power supply for DRAM interface |

| No. | Name | I/O | Description |
|---------------|-------------------|-----|---|
| 32 36 | RAA4 RAA8 | O | Address output to external D-RAM; ADR4 Address output to external D-RAM; ADR8 |
| 37 | RAOEX | O | Data output enable signal output to external D-RAM |
| 38 | DGND | – | Digital GND |
| 39 | RACASX | O | Column address strobe signal output to external D-RAM |
| 40 | RAD2 | I/O | External D-RAM and data input/output; D2 |
| 41 | RAD3 | I/O | External D-RAM and data input/output; D3 (MSB) |
| 42 | RAA9 | O | Address output to external D-RAM; ADR9 |
| 43 | RARASX | O | Low address strobe signal output to external D-RAM |
| 44 | RAWEX | O | Data write enable signal output to external D-RAM |
| 45 | RAD1 | I/O | External D-RAM and data input/output; D1 |
| 46 | RAD0 | I/O | External D-RAM and data input/output; D0 (LSB) |
| 47* | TCSR | O | Track cross signal |
| 48* | ACRCER | O | ADIP CRC error flag monitor output |
| 49* | PLCK | O | EFM PLL clock output during Play |
| 50 | EFM0 | O | EFM signal output during Record; C1F (C1 error flag) monitor output during Play. |
| 51* | X700KO | O | Clock output; f = 705.6kHz; clock is not output when RSTX = 0. |
| 52* | EXPORT0 | O | Microcomputer extension output port 0 |
| 53* | EXPORT1 | O | Microcomputer extension output port 1 |
| 54 | TESO1 | O | Microcomputer extension output port 2 during PLLR changeover |
| 55 | TEST3 | I/O | Microcomputer extension output port 3 during PLLOSC changeover |
| 56 | TEST4 | I/O | Microcomputer extension output port 4 during EXTCLK changeover |
| 57 | CDDATA | I/O | CD data input for high-speed dubbing; microcomputer extension port 5 during changeover |
| 58 | CDLRCK | I/O | CD LR clock input for high-speed dubbing; microcomputer extension port 6 during changeover |
| 59 | CDBCLK | I/O | CD bit clock input for high-speed dubbing; microcomputer extension port 7 during changeover |
| 60 | VXI | I | PLL clock input for varying pitch |
| 61* | VPO | O | PLL phase error input for varying pitch |
| 62 | VDD1 | – | Digital power supply |
| 63 | DGND | – | Digital GND |
| 64 | XI | I | Oscillation circuit input; 33.8688MHz |
| 65 | XO | O | |

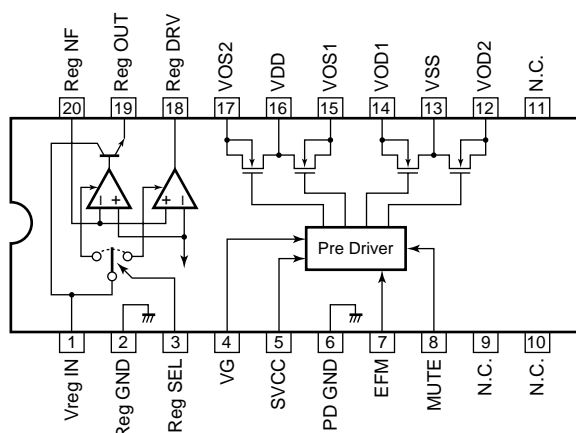
| No. | Name | I/O | Description |
|---------------|-------------------|-----|--|
| 66 | DIN | I | Digital input signal |
| 67 | DOUT | O | Digital output signal |
| 68 | VDD3 | – | Power supply for internal PLL |
| 69 | DGND | – | Digital GND |
| 70 | LRCK | O | Music data Lch/Rch changeover output |
| 71 | BCLK | O | Music data shift lock |
| 72 | DFCK | O | Clock for AD/DA converter digital filter; 256fs |
| 73 | ADDATA | I | Audio data input |
| 74 | DADATA | O | Audio data output |
| 75* | FEMON | O | Focus error signal monitor output |
| 76* | TOTMON | O | Total signal monitor output |
| 77* | TEMON | O | Tracking error signal monitor output |
| 78* | SBCK | I | DIN sub code readout clock; EIAJ CP-309 format |
| 79* | SBO | O | DIN sub code serial data; EIAJ CP-309 format |
| 80* | SBSY | O | DIN sub code block synchronization signal; EIAJ CP-309 format |
| 81* | SFSY | O | DIN sub code frame synchronization signal; EIAJ CP-309 format |
| 82 | FOK | O | Focus OK detection signal; "0": Focus OK |
| 83 | SENSE | O | Servo status detection signal; "1": Auto Move/ Auto Jump/ Auto Focus lead-in in progress |
| 84 | COUT | O | Track cross signal output |
| 85 | MCKK | O | Clock output for microcomputer; clock is output even when RSTX = 0. |
| 86 | DINTX | O | Interrupt Request output signal for system computer interface |
| 87 | VDD1 | – | Digital power supply |
| 88 | DGND | – | Digital GND |
| 89 | RSTX | I | Tip reset input; reset with L (NOTE) |
| 90 | SYD0 | I/O | System computer interface data bus terminal; (LSB) |
| 91 96 | SYD1 SYD6 | I/O | System computer interface data bus terminal |
| 97 | SYD7 | I/O | System computer interface data bus terminal; (MSB) |
| 98 | SYWRX | I | System computer interface register write pulse input |
| 99 | SYRDX | I | System computer interface register read pulse input |
| 100 | SYRS | I | System computer interface register select input |

Terminals denoted with an asterisk (*) are (Open) terminals that are not externally connected.
 NOTE) Set RSTX to "L" when the power is being turned ON or after it has been turned ON.

■ BD7910FV (CORE MAIN ASSY : IC116)

• Head Driver

•Block Diagram



•Pin Function

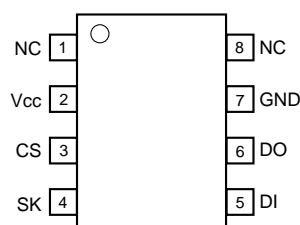
| No. | Name | Description |
|-----|--------|--|
| 1 | VregIN | Regulator input and regulator power supply |
| 2 | RegGND | Regulator GND |
| 3 | RegSEL | Regulator selection terminal |
| 4 | VG | Power MOS drive voltage input |
| 5 | SVCC | EFM high-level output voltage |

| No. | Name | Description |
|-----|--------|--|
| 6 | PDGND | Predrive GND |
| 7 | EFM | EFM signal input |
| 8 | MUTE | Mute control |
| 9 | N.C. | Not used |
| 10 | N.C. | |
| 11 | N.C. | |
| 12 | VOD2 | Sink output (lower side power MOS drain) |
| 13 | VSS | H-bridge GND (lower side power MOS source) |
| 14 | VOD1 | Sink output (lower side power MOS drain) |
| 15 | VOS1 | Source output (upper side power MOS source) |
| 16 | VDD | H-bridge power supply (upper side power MOS drain) |
| 17 | VOS2 | Source output (upper side power MOS source) |
| 18 | RegDRV | External PNP drive output for the regulator |
| 19 | RegOUT | Regulator output (emitter follower output) |
| 20 | RegNF | Regulator feedback terminal |

■ BR93LC56F (MD CORE MAIN UNIT : IC110)

• EEPROM

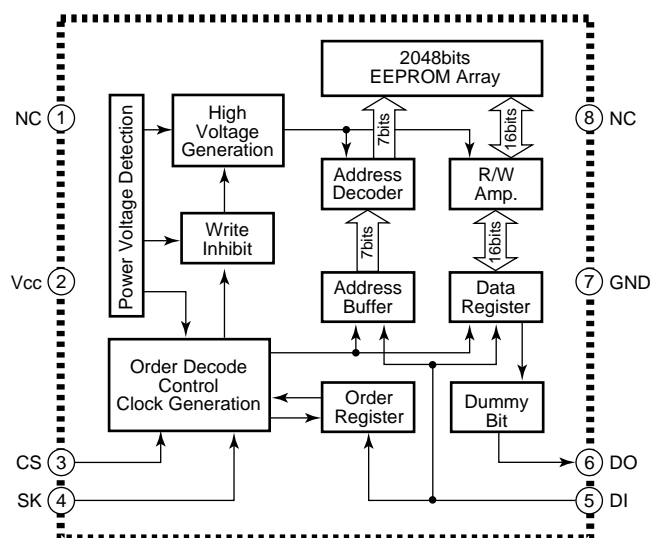
•Pin Assignment (Top View)



•Pin Function

| No. | Name | Description |
|-----|------|--|
| 1 | NC | Not connected |
| 2 | Vcc | Power supply |
| 3 | CS | Chip selection input |
| 4 | SK | Serial clock input |
| 5 | DI | Start bit, operation code, address, and serial data input |
| 6 | DO | Serial data output, READY/BUSY internal status indication output |
| 7 | GND | Ground |
| 8 | NC | Not connected |

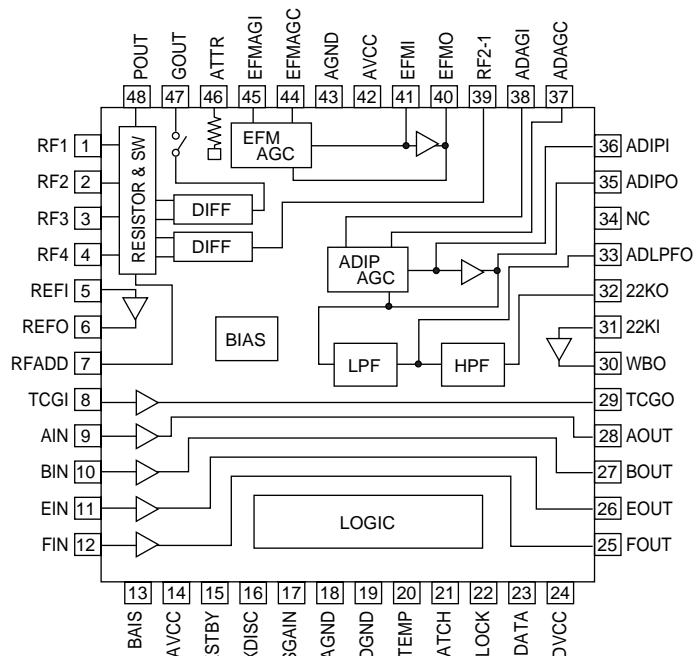
•Block Diagram



IR3R55M (CORE MAIN ASSY : IC101)

• RF Signal Processor

•Block Diagram



•Pin Function

| No. | Name | Description |
|-----|-------|---|
| 1 | RF1 | Inputs RF signal input terminal 1 pickup RF signal output. |
| 2 | RF2 | Inputs RF signal input terminal 2 pickup RF signal output. |
| 3 | RF3 | Inputs RF signal input terminal 3 pickup RF signal output. |
| 4 | RF4 | Inputs RF signal input terminal 4 pickup RF signal output. |
| 5 | REFI | Standard voltage amp input terminal |
| 6 | REFO | Standard voltage amp output terminal |
| 7 | RFADD | RF1 – 4 resistance addition output terminal |
| 8 | TCGI | Track cross detection signal amp input terminal during groove input |
| 9 | AIN | Servo-use signal amp (Focus servo system) inversion input terminal |
| 10 | BIN | Servo-use signal amp (Focus servo system) inversion input terminal |
| 11 | EIN | Servo-use signal amp (Tracking servo system) inversion input terminal |
| 12 | FIN | Servo-use signal amp (Tracking servo system) inversion input terminal |
| 13 | BIAS | Bias input terminal |
| 14 | AVCC | Analog power terminal |
| 15* | VSTBY | Logic signal output terminal (outputs STBY signal inversion signal) |

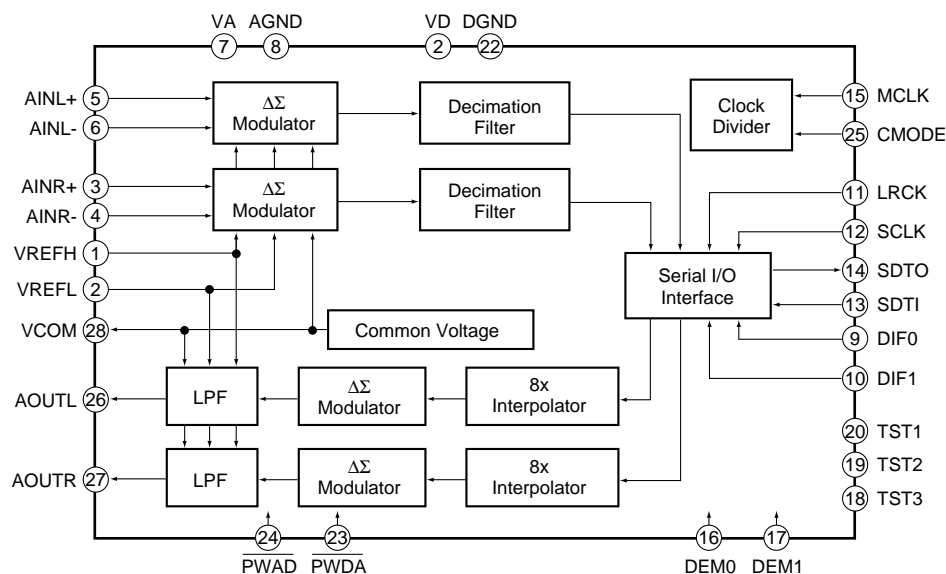
| No. | Name | Description |
|-----|--------|---|
| 16* | XDISC | Logic signal output terminal (outputs DISC signal inversion signal) |
| 17* | XSGAIN | Logic signal output terminal (outputs SGAIN signal inversion signal) |
| 18 | AGND | Analog part GND terminal |
| 19 | DGND | Digital part GND terminal |
| 20 | DTEMP | Tip temperature detection terminal |
| 21 | LATCH | Latch signal input terminal |
| 22 | CLOCK | Clock signal input terminal |
| 23 | DATA | Serial data input terminal |
| 24 | DVCC | Digital part power terminal |
| 25 | FOUT | Servo-use signal amp (Tracking servo system) output terminal |
| 26 | EOUT | Servo-use signal amp (Tracking servo system) output terminal |
| 27 | BOUT | Servo-use signal amp (Focus servo system) output terminal |
| 28 | AOUT | Servo-use signal amp (Focus servo system) output terminal |
| 29 | TCGO | Track cross detection signal amp output terminal during groove output |
| 30 | WBO | Comparator output terminal for ADIP signal 2-value conversion |
| 31 | 22KI | Comparator input terminal for ADIP signal 2-value conversion |
| 32 | 22KO | ADIP signal HPF amp output terminal |
| 33 | ADLPFO | ADIP signal LPF amp output terminal |
| 34* | NC | NC |
| 35 | ADIPO | ADIP signal preamp output terminal |
| 36 | ADIPI | ADIP signal AGC amp output terminal |
| 37 | ADAGC | Smoothing capacitor connection terminal for ADIP signal AGC |
| 38 | ADAGI | ADIP signal AGC amp input terminal |
| 39 | RF2-1 | RF1, RF2 differential signal |
| 40 | EFMO | RF signal preamp output terminal |
| 41* | EFMI | RF signal AGC amp output terminal |
| 42 | AVCC | Analog part power terminal |
| 43 | AGND | Analog part GND terminal |
| 44 | EFMAGC | Smoothing capacitor connection terminal for EFM signal AGC |
| 45 | EFMAGI | EFM signal AGC amp input terminal |
| 46* | ATTR | Terminal for attenuating 47, 48 pin output signal |
| 47 | GOUT | Outputs RF1 + RF2 + RF3 – RF3 – RF4 signal during groove output |
| 48 | POUT | RF1 – 4 resistance addition output during pit output |

Terminals denoted with an asterisk (*) are (Open) terminals that are not externally connected.

■ AK4520A (MD ASSY : IC4301)

• AD/DA Converter

●Block Diagram



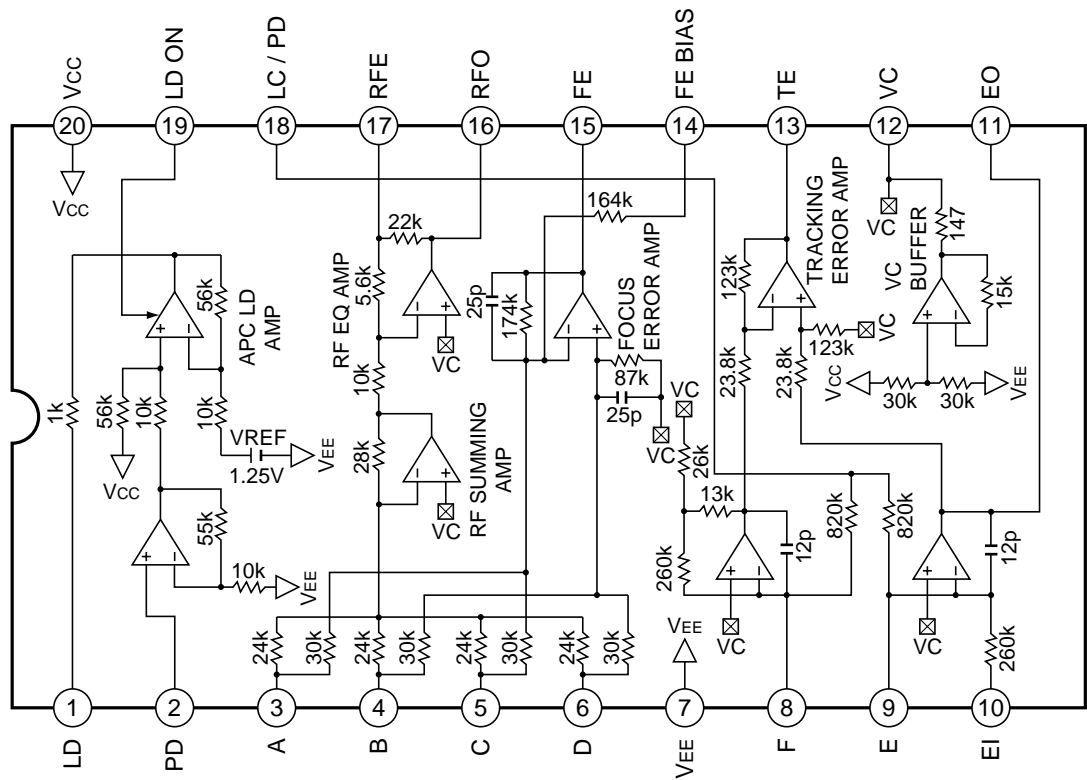
●Pin Function

| No. | Pin Name | I/O | Function | No. | Pin Name | I/O | Function |
|-----|----------|-----|--|-----|----------|-----|--|
| 1 | VREFH | I | Positive voltage reference input pin, VA | 15 | MCLK | I | Master clock input pin |
| 2 | VREFL | I | Negative voltage reference input pin, AGND | 16 | DEM0 | I | De-emphasis frequency select pin |
| 3 | AINR+ | I | R ch analog positive input pin | 17 | DEM1 | I | De-emphasis frequency select pin |
| 4 | AINR- | I | R ch analog negative input pin | 18 | TST3 | I/O | Test pins (Pull down pins) Open or connect to DGND. |
| 5 | AINL+ | I | L ch analog positive input pin | 19 | TST2 | I/O | |
| 6 | AINL- | I | L ch analog negative input pin | 20 | TST1 | I | |
| 7 | VA | - | Analog power supply pin | 21 | VD | - | Digital power supply pin |
| 8 | AGND | - | Analog ground pin | 22 | DGND | - | Digital ground pin |
| 9 | DIF0 | I | Audio data interface format pin | 23 | PWDA | I | DAC power-down mode pin |
| 10 | DIF1 | I | Audio data interface format pin | 24 | PWAD | I | ADC power-down mode pin |
| 11 | LRCK | I | Input/Output channel clock pin | 25 | CMODE | I | Master clock select pin "H" : 384fs, "L" : 256fs |
| 12 | SCLK | I | Audio serial data clock pin | 26 | AOUTL | O | L ch analog output pin |
| 13 | SDTI | I | Audio serial data input pin | 27 | AOUTR | O | R ch analog output pin |
| 14 | SDTO | O | Audio serial data output pin | 28 | VCOM | O | Common voltage output pin, VA/2 |

■ CXA1821M (CD ASSY : IC1101)

• RF AMP. IC

●Block Diagram



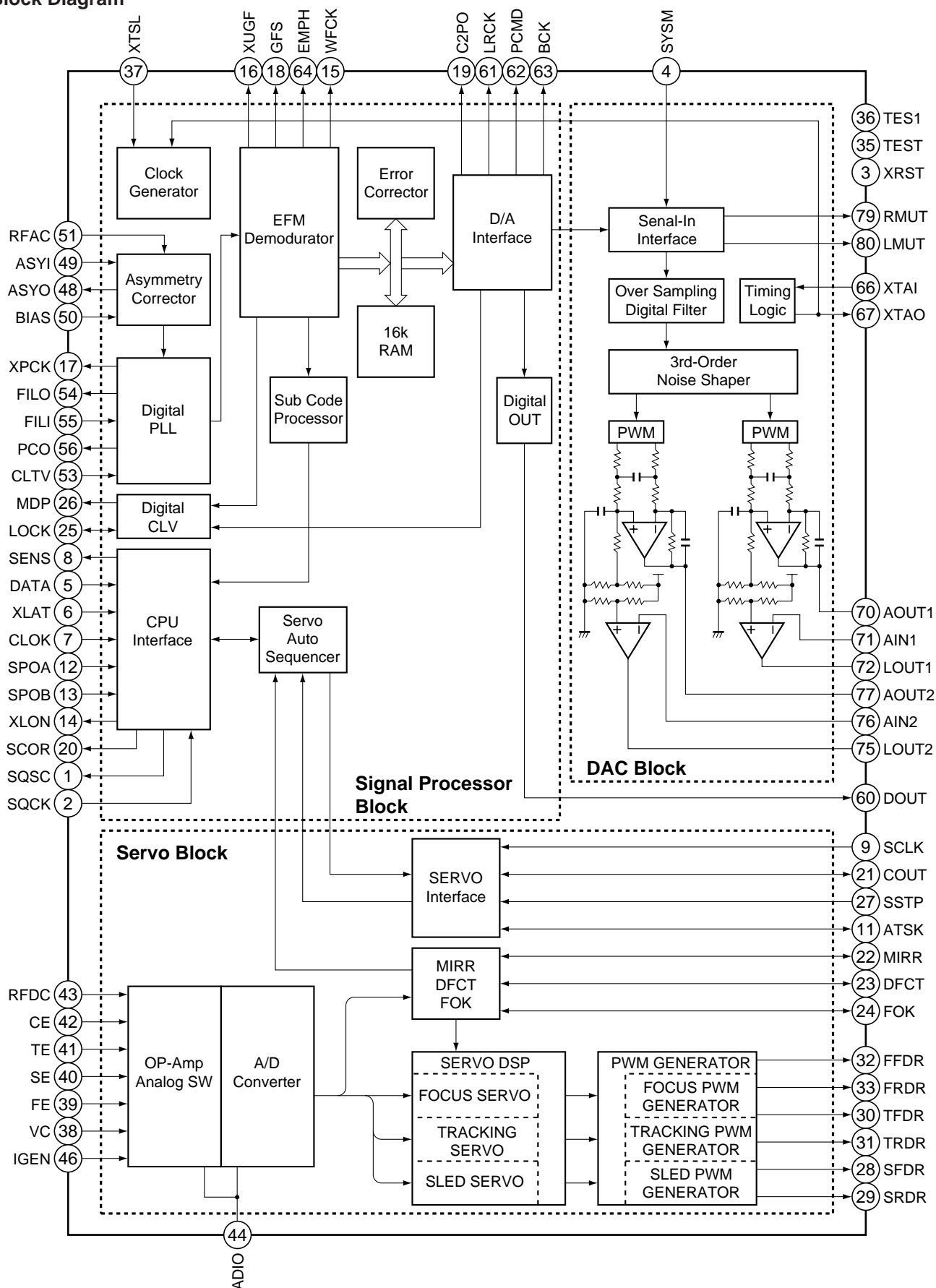
●Pin Function

| No. | Pin Name | I/O | Function | No. | Pin Name | I/O | Function |
|-----|----------|-----|--|-----|----------|-----|--|
| 1 | LD | O | APC amplifier output | 11 | EO | - | Gain adjust the signal which was input from pin 9. |
| 2 | PD | I | APC amplifier input | 12 | VC | O | DC voltage output of (VCC+VEE)/2 |
| 3 | A | I | RF amplifier and FE amplifier input | 13 | TE | O | Tracking error amplifier output F-E signal is output. |
| 4 | B | | | 14 | FE BIAS | I | Pin for focus bias adjustment |
| 5 | C | | | 15 | FE | O | Focus error amplifier output |
| 6 | D | | | 16 | RFO | O | RF amplifier output |
| 7 | VEE | - | Ground pin | 17 | RFE | - | Pin for RF amplifier equalization |
| 8 | F | I | Tracking error amplifier input. | 18 | LC/PD | I | Bias pin VCC : LC , OPEN : PDIC |
| 9 | E | | | 19 | LD ON | I | ON/OFF switching pin of APC amplifier VCC : ON, VEE : OFF |
| 10 | EI | - | Gain adjust the signal which was input from pin 9. | 20 | VCC | - | Power supply pin |

CXD2587Q (CD ASSY : IC1201)

• SERVO IC

•Block Diagram



●Pin Function

| iN- o. | Pin Name | I/O | Function | No. | Pin Name | I/O | Function |
|-----------|----------|-----|--|-----|----------|-----|--|
| 1 | SQSO | O | SubQ 80-bit, PCM peak and level data output CD TEXT data output | 41 | TE | I | Tracking error input |
| 2 | SQCK | I | Clock input for SQSO readout | 42 | CE | I | Center servo analog input |
| 3 | XRST | I | System reset Reset when "L" | 43 | RFDC | I | RF signal input |
| 4 | SYSM | I | Mute input Mute when "H" | 44 | ADIO | O | OP amplifier output |
| 5 | DATA | I | Serial data input from CPU | 45 | AVss0 | – | Analog GND |
| 6 | XLAT | I | Latch input from CPU Serial data is latched at the falling edge. | 46 | IGEN | I | Constant current input for OP amplifier |
| 7 | CLOK | I | Serial data transfer clock input from CPU | 47 | AVDD0 | – | Analog power supply |
| 8 | SENS | O | SENS output to CPU | 48 | ASYO | O | EFM full-swing output ("L"=VSS, "H"=VDD) |
| 9 | SCLK | I | Clock input for SENS serial-data readout | 49 | ASYI | I | Asymmetry compare voltage input |
| 10 | VDD | – | Digital power supply | 50 | BIAS | I | Constant current input of the asymmetry circuit |
| 11 | ATSK | I/O | Input and output for anti-shock | 51 | RFAC | I | EFM signal input |
| 12 | SPOA | I | Microcomputer extended interface (input A) | 52 | AVss3 | – | Analog GND |
| 13 | SPOB | I | Microcomputer extended interface (input B) | 53 | CLTV | I | VCO control voltage input for master |
| 14 | XLON | O | Microcomputer extended interface (output) | 54 | FILO | O | Filter output for master PLL (Slave=digital PLL) |
| 15 | WFCK | O | WFCK output | 55 | FILI | I | Filter input for master PLL |
| 16 | XUGF | O | XUGF output MNT1 and RFCK output by switching the command. | 56 | PCO | O | Charge pump output for master PLL |
| 17 | XPLCK | O | XPLCK output MNT0 output by switching the command. | 57 | AVDD3 | – | Analog power supply |
| 18 | GFS | O | GFS output MNT3 and XRAOF output by switching the command. | 58 | Vss | – | Digital GND |
| 19 | C2PO | O | C2PO output GTOP output by switching the command. | 59 | VDD | – | Digital power supply |
| 20 | SCOR | O | Outputs "H" when either subcode sync. S0 or S1 is detected. | 60 | DOUT | O | DIGITAL OUT output |
| 21 | COUT | I/O | Input and output of track-number count signal | 61 | LRCK | O | D/A interface LR clock output f=Fs |
| 22 | MIRR | I/O | Mirror signal input and output | 62 | PCMD | O | D/A interface Serial data output (two's complement, MSB first) |
| 23 | DFCT | I/O | Defect signal input and output | 63 | BCK | O | D/A interface Bit clock output |
| 24 | FOK | I/O | Focus OK signal input and output | 64 | EMPH | O | Outputs "H" when the playback disc has emphasis, and "L" when there is no emphasis. |
| 25 | LOCK | I/O | GFS is sampled at 460Hz;when GFS is "H", this pin outputs "H". If GFS is "L" eight consecutive samples, this pin outputs "L". Input when LKIN="H". | 65 | XVDD | – | Power supply for master clock |
| 26 | MDP | O | Servo control output of spindle motor | 66 | XTAI | I | Crystal oscillation circuit input Input the external master clock via this pin. |
| 27 | SSTP | I | Detection signal input of disc innermost | 67 | XTAO | O | Crystal oscillation circuit output |
| 28 | SFDR | O | Sled drive output | 68 | XVss | – | GND for master clock |
| 29 | SRDR | O | | 69 | AVDD1 | – | Analog power supply |
| 30 | TFDR | O | Tracking drive output | 70 | AOUT1 | O | L ch analog output |
| 31 | TRDR | O | | 71 | AIN1 | I | L ch OP amp. input |
| 32 | FFDR | O | Focus drive output | 72 | LOUT1 | O | L ch LINE output |
| 33 | FRDR | O | | 73 | AVss1 | – | Analog GND |
| 34 | Vss | – | Digital GND | 74 | AVss2 | – | Analog GND |
| 35 | TEST | I | TEST pin : normally GND | 75 | LOUT2 | O | R ch LINE output |
| 36 | TEST | I | | 76 | AIN2 | I | R ch OP amp. input |
| 37 | XTSL | I | Crystal selector input "L":16.9344MHz , "H":33.8688MHz | 77 | AOUT2 | O | R ch analog output |
| 38 | VC | I | Center voltage input | 78 | AVDD2 | – | Analog power supply |
| 39 | FE | I | Focus error signal input | 79 | RMUT | O | R ch zero detection flag |
| 40 | SE | I | Sled error signal input | 80 | LMUT | O | L ch zero detection flag |

Notes)

- PCMD is an MSB first, two's complement output.
- GTP is used to monitor the frame sync protection status. (High:sync protection window released)
- XUGF is the negative pulse for the frame sync derived from the EFM signal. It is the signal before sync protection.
- XPLCK is the inverse of the EFM PLL clock. The PLL is designed so that the falling edge of XPLCK and the EFM signal transition point coincide.
- GFS goes high when the frame sync and the insertion protection timing match.
- RFCK is derived with the crystal accuracy. This signal has a cycle of 136μs.
- C2PO represents the data error status.
- XRAOF is generated when the 16K RAM exceeds the ±4F jitter margin.

PDG241B (U-COM ASSY : IC5501)

• System Control IC

• Pin Function

| No. | Name | I/O | Description |
|-----|-------------|-----|---------------------------|
| 1 | CDLAT | O | CD LSI Latch |
| 2 | CD DATA | O | CD LSI Data |
| 3 | CDSYSMUTE | O | CD decoder mute control |
| 4 | CDRESET | O | CD LSI Reset |
| 5 | CDCONT | O | CD LSI power control |
| 6 | CDMUTE | O | CD mute control |
| 7 | CDSQSO | I | CD SUBQ data input |
| 8 | - | O | Open |
| 9 | CDSQCK | O | CD SUBQ clock |
| 10 | LINE 2 MUTE | O | Line 2 mute control |
| 11 | LINE 1 MUTE | O | Line 1 mute control |
| 12 | LINE CONT | O | Line ATT control |
| 13 | VOLCE | O | E-Volume LSI chip enabled |
| 14 | TOUCH | I | Touch sencer input |
| 15 | VOLDATA | O | E-Volume LSI data |
| 16 | VOLCLK | O | E-Volume LSI clock |
| 17 | SYSPOW | O | System power control |
| 18 | SCLK | O | System bus clock |
| 19 | SDATA | I/O | System bus data |
| 20 | SREQ | I/O | System bus request |
| 21 | SPCONT | O | Speaker relay control |
| 22 | SYSMUTE | O | System mute control |
| 23 | TXCE | O | TX LSI chip enabled |
| 24 | TXODATA | O | TX LSI data output |
| 25 | TXCLK | O | TX LSI clock |
| 26 | TXIDAT | I | TX LSI data input |
| 27 | TXMUTE | O | TX mute control |
| 28 | TXPOW | O | TX power control |
| 29 | PDSPOW | O | RDS power control |
| 30 | RDSDATA | I | RDS data input |
| 31 | - | O | Open |
| 32 | - | O | |
| 33 | - | O | |
| 34 | - | O | |
| 35 | - | O | |
| 36 | - | O | |
| 37 | - | O | |
| 38 | - | O | |
| 39 | BEEP | O | Beep control |
| 40 | RESET | I | System reset |

| No. | Name | I/O | Description |
|-----|----------|-----|---|
| 41 | Vss | - | GND |
| 42 | XTAL | - | Oscillator pulses (12MHz) |
| 43 | EXTAL | I | |
| 44 | LCDCE | O | LCD driver chip enabled |
| 45 | LCDRESET | O | LCD driver reset |
| 46 | LCDDATA | O | LCD driver data |
| 47 | LCDCLK | O | LCD driver clock |
| 48 | CDDOOR2 | I | CD Door detection input 2 |
| 49 | CDDOOR1 | I | CD Door detection input 1 |
| 50 | CDDOOR4 | I | CD Door detection input 4 |
| 51 | CDDOOR3 | I | CD Door detection input 3 |
| 52 | AVss | - | AD converter GND |
| 53 | AVref | I | AD converter reference voltage |
| 54 | AVdd | - | AD converter voltage |
| 55 | SIMUKE | I | Model type select input |
| 56 | PROTECT | I | Protect detection input |
| 57 | ST/TUNE | I | TX STEREO/TUNED input |
| 58 | JOGIN | I | JOG input |
| 59 | - | I | GND |
| 60 | KEY3 | I | Key input |
| 61 | KEY2 | I | Key input |
| 62 | KEY1 | I | Key input |
| 63 | B.LIGHT | O | LCD back light control |
| 64 | STBYLED | O | Standby LED control |
| 65 | OPTINCD | O | Optical output control (CD input) |
| 66 | OPTINAUX | O | Optical output control (AUX input) |
| 67 | MDSTB | I | MD mecha control data |
| 68 | MDMUTE | I | MD mecha control mute |
| 69 | MDRESET | O | MD mecha control reset |
| 70 | MDPDOWN | O | Power-down detection output of MD mecha |
| 71 | MDCMODE | O | MD converter FS mode |
| 72 | MDDAPOW | O | MD DAC power control |
| 73 | MDADPOW | O | MD ADC power control |
| 74 | MDDIF1 | O | MD audio format 0 |
| 75 | MDDIFO | O | MD audio format 1 |
| 76 | MDPBMUTE | O | MD PB mute control |
| 77 | RDSCLK | I | RDS clock input |
| 78 | ACPULS | I | AC pulse input |
| 79 | MDIDAT | I | MD mecha control data input |
| 80 | MDODAT | O | MD mecha control data output |

| No. | Name | I/O | Description |
|-----|--------|-----|-------------------------------|
| 81 | MDCLK | O | MD mecha control clock output |
| 82 | CDSCOR | I | CD SUBQ level input |
| 83 | MDFLAP | I | MD disc detection input |
| 84 | - | O | Open |
| 85 | REMIN | I | Remote control input |
| 86 | - | i | Open |
| 87 | - | I | Open |
| 88 | GND | - | GND |
| 89 | Vdd | - | +5v |
| 90 | NC | - | Open |

| No. | Name | I/O | Description |
|-----|---------|-----|-------------------------------------|
| 91 | - | O | Open |
| 92 | - | O | Open |
| 93 | MDTEST | I | MD Service mode |
| 94 | CDCLOSE | O | CD door CLOSE drive output |
| 95 | CDOPEN | O | CD door OPEN drive output |
| 96 | CDLDON | O | CD Laserdiode control output |
| 97 | CDINSID | I | CD Inside SW input |
| 98 | CDSCLK | O | CD automatic adjustment input clock |
| 99 | CDSSENS | I | CD LSI replay (GFS, FOK) |
| 100 | CDCLK | O | CD LSI clock |

7.2 DIAGNOSIS

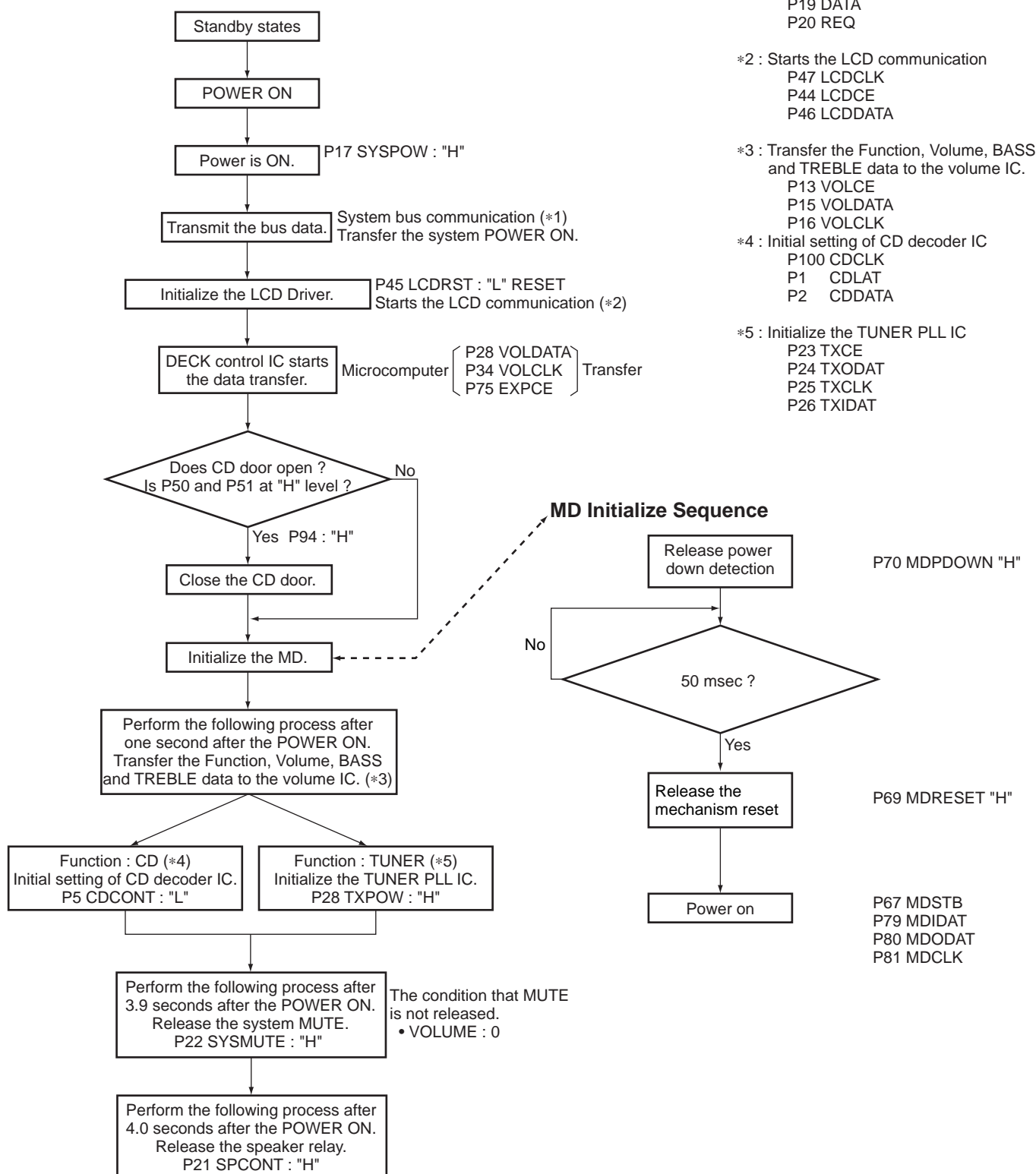
7.2.1 DETAILS OF ERROR DISPLAY

| Error Display | Details of Error | Measure |
|--|---|---|
| Can't REC | <ul style="list-style-type: none"> DEFECT occurred 10 times continuously during REC-PLAY. Recordable cluster became 0 since DEFECT occurred during REC-PLAY. Address is unreadable. REC state can not be set for 20 seconds even after try again. | <ul style="list-style-type: none"> Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely. |
| Can't COPY | <ul style="list-style-type: none"> Determined as follows according to the channel status of the signals input from D-IN during REC-PAUSE or REC-PLAY. <ol style="list-style-type: none"> Other than audio Other than consumer use Copy NG due to inversion of COPY bit of CD | <ul style="list-style-type: none"> Check if CD is copy-proof. (Example: CD-R, etc.) |
| DIN UNLOCK | <ul style="list-style-type: none"> The following occurred for digital signal input from D-IN during REC-PAUSE, REC-PLAY, or CD FUNC playback <ol style="list-style-type: none"> Digital IN PLL unlocked. Locked at other than FS = 32, 44.1 and 48 kHz. | <ul style="list-style-type: none"> Check if D-IN signal line is normal. |
| TOC FULL | <ul style="list-style-type: none"> No area for registering music number and character information during REC-PLAY (music name, disc number, etc.) | <ul style="list-style-type: none"> Replace with recording/playback disc with space for registering UTOC. |
| UTOCER T S R | <ul style="list-style-type: none"> FTNO > LTNO. FTNO ≠ 0 or 1. UTOC recorded on DISC could not be read. | <ul style="list-style-type: none"> Replace with other discs to check if UTOC data is normal. |
| UTOCER A | <ul style="list-style-type: none"> Start address > End address. | <ul style="list-style-type: none"> Replace with other discs to check if UTOC data is normal. |
| UTOCER L 0 1 2 4 | <ul style="list-style-type: none"> Any one data of UTOC 0 to 4 has looped. | <ul style="list-style-type: none"> Replace with other discs to check if UTOC data is normal. |
| NOT AUDIO | <ul style="list-style-type: none"> Data not for audio is recorded for TNO track mode currently selected. | <ul style="list-style-type: none"> Select other TNO or replace with other discs. |
| ? DISC | <ul style="list-style-type: none"> Data called MINI of system ID written in ASCII codes in TOC is incorrect. Disc type written in TOC is not pre-mastered MD, recording MD, or hybrid MD. | <ul style="list-style-type: none"> Disc is outside specifications. Replace with different disc and check. |
| DISC FULL | <ul style="list-style-type: none"> No recordable space when attempted to set REC-PAUSE. | <ul style="list-style-type: none"> Replace with different disc with recording space. |
| Playback MD | <ul style="list-style-type: none"> Disc only for playback was loaded when attempted to set REC-PAUSE or edit. | <ul style="list-style-type: none"> Disc is for playback only. Replace with disc for recording. |
| PROTECTED | <ul style="list-style-type: none"> Attempted to record or edit even through REC-proof knob of disc for recording was in the REC-proof state. Attempted to edit track with write-protect according to information on UTOC. | <ul style="list-style-type: none"> Track attempted to be edited is write-protected. Try again with different track. Restore the REC-proof knob and try again. |
| Can't EDIT | <ul style="list-style-type: none"> Editing conditions were not satisfied for each editing function. | <ul style="list-style-type: none"> Operating method is wrong. Try again using correct method. |
| DISC ER [DISC ER R DISC ER S DISC ER W] | <ul style="list-style-type: none"> Data read was incorrect or could not be read properly. Error occurred during music data recording and recording could not be performed correctly. Music data READ search time exceeded REC PAUSE shift abnormality (search time exceeded) SD WRITE (search time exceeded) | <ul style="list-style-type: none"> Faulty TOC or UTOC data or scratch on disc. Replaced with other discs. |

| Error Display | Details of Error | Measure |
|--|--|---|
| ? DISC | <ul style="list-style-type: none"> ● TOC read was incorrect or could not be read properly. | <ul style="list-style-type: none"> ● The TOC data recorded on the disc do not comply with MD Standards, so try using another disc. ● The disc may be scratched or damaged, so try using another disc. |
| UTOCER W | <ul style="list-style-type: none"> ● Fault occurred during rewriting of UTOC rewriting, and rewriting could not be performed correctly. | <ul style="list-style-type: none"> ● Scratch on disc. Replaced with other discs. |
| FOCUS ERR | <ul style="list-style-type: none"> ● Inserted a disc but could not bring in FOCUS. | <ul style="list-style-type: none"> ● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely. |
| MEM. FULL | <ul style="list-style-type: none"> ● The DRAM has become filled with music data, but they can not be written (to the disc). | <ul style="list-style-type: none"> ● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely. |
| BLANK DISC | <ul style="list-style-type: none"> ● After reading UTOC, total number of TNO and NAME characters was 0. | <ul style="list-style-type: none"> ● Record and check if disc is recordable. |
| DEFECT | <ul style="list-style-type: none"> ● Focus execution error, etc. occurred due to shock during REC-PLAY. | <ul style="list-style-type: none"> ● Check if there are scratches, dusts, fingerprints, or black spots on disc. Check if disc fluctuates eccentrically or moves up and down largely. |
| UTOCER W | <ul style="list-style-type: none"> ● UTOC read was correct but could not be rewrite it. | <ul style="list-style-type: none"> ● Check to see if the recording head contact is correct or if there are any disconnections between the board and the recording head. |
| EEPROM ER | <ul style="list-style-type: none"> ● The EEPROM data are incorrect. | <ul style="list-style-type: none"> ● Try doing a Preliminary Adjustment and a normal Adjustment. If the problem still persists, replace the EEPROM. |
| MECH ER 3E 3M 3L 3D 2E 2M 2L 2D 1E 1M 1L 1D | <ul style="list-style-type: none"> ● Never completes EJECT. ● Never moves HEAD UP. ● Never moves HEAD DOWN. ● The set microcomputer and MD mechanism microcomputer are not communicating properly. | |
| SIO ERROR | <ul style="list-style-type: none"> ● It can't communicate with system control IC and MD mechanism control IC. | <ul style="list-style-type: none"> ● Check if communication line with the MD mechanism assy and connector is normal. |

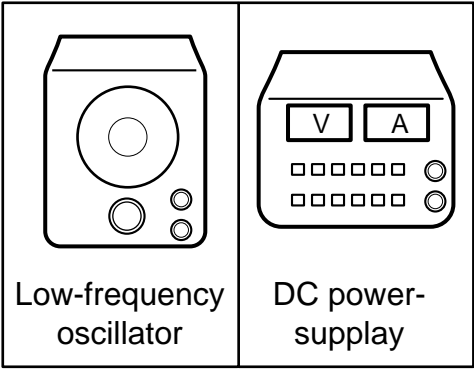
7.2.2 SEQUENCE AFTER THE POWER ON

Note 1 : IC No. or P** without name indicate the pin No. of microcomputer.



7.3 SINGLE OPERATION METHOD

■ Jigs and Measuring instruments



■ Single operation method and frequency oscillator inputlevel.

1. Connect part ㉑ of the AF ASSY [W420(+8V),W421 (+15V), W422 (+5.6V), W423(GND) and DC power-supplay.
(Refer to Fig. 7-1.)

| Connect point ㉑ | DC power-supplay | |
|-----------------------|------------------|---------|
| | Voltage (V) | Remarks |
| AF ASSY, W420 (+8v) | +8V | |
| AF ASSY, W421 (+15v) | +15V | |
| AF ASSY, W422 (+5.6v) | +5.6V | |
| AF ASSY, W423 (GND) | GND | |

2. Connect part ㉒ of the U-COM ASSY [CN105 pin8 (AC), AF ASSY[W423 (GND)]] and frequency oscillator.
(Refer to Fig. 7-1 and 7-2.)

| Connect point ㉒ | Low-frequency oscillator | | | |
|-----------------------------|--------------------------|-----------------|---------|---------|
| | frequency | level | Gnd | Remarks |
| U-COM ASSY, CN105 pin8 (AC) | 50 or 60 Hz | Approx.2.0 Vrms | ———— | Note. |
| AF ASSY, W423 (GND) | ———— | ———— | osc GND | |

Note: Set up the low-frequency oscillator level with in the limits of product moves.



C U-COM ASSY

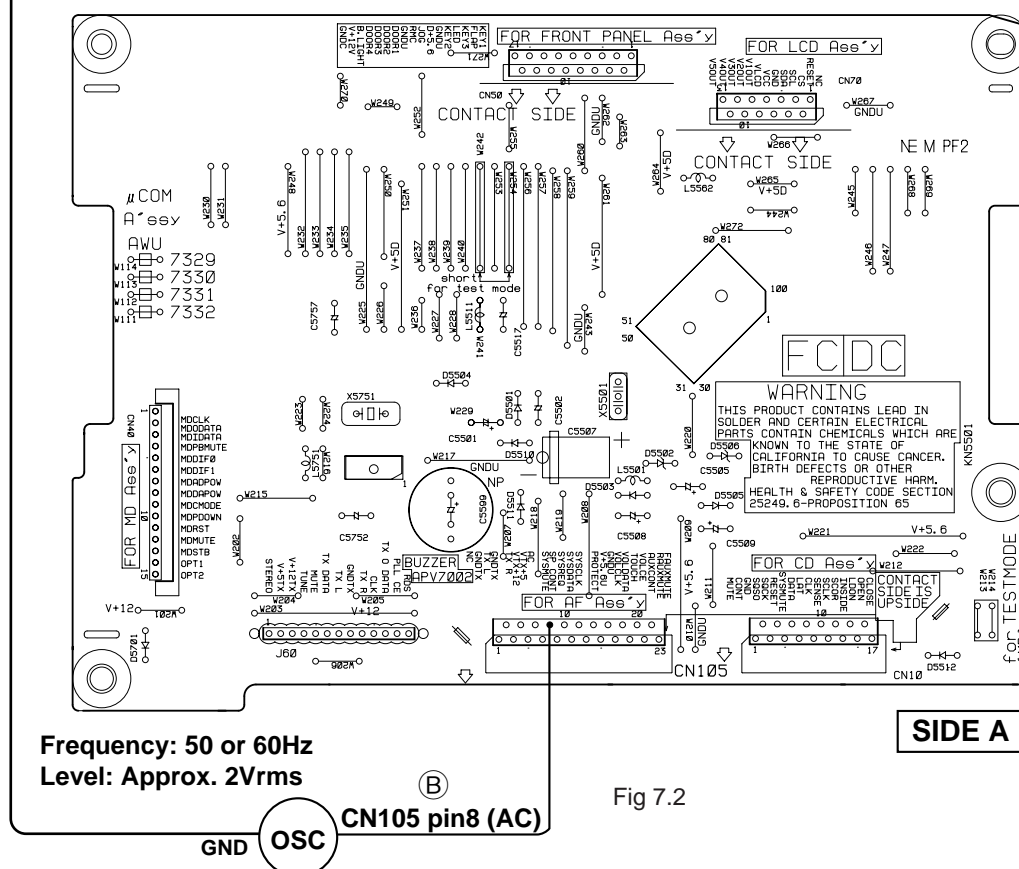
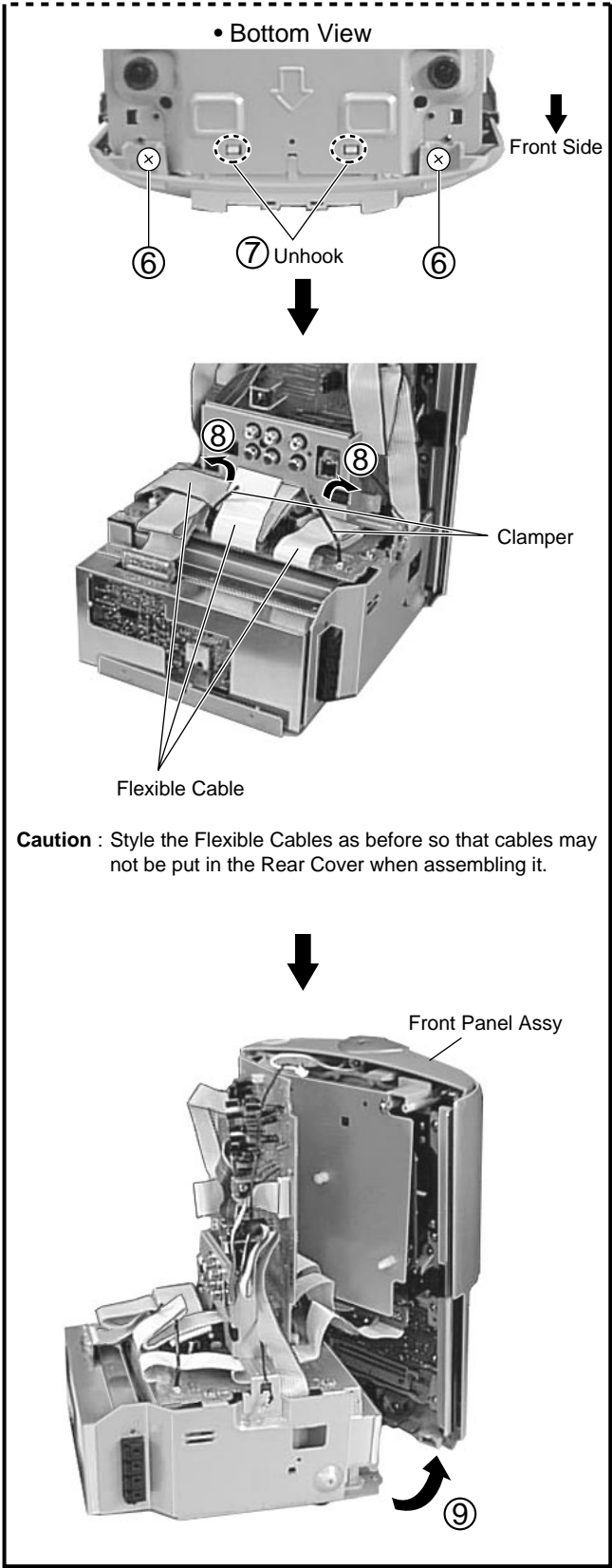
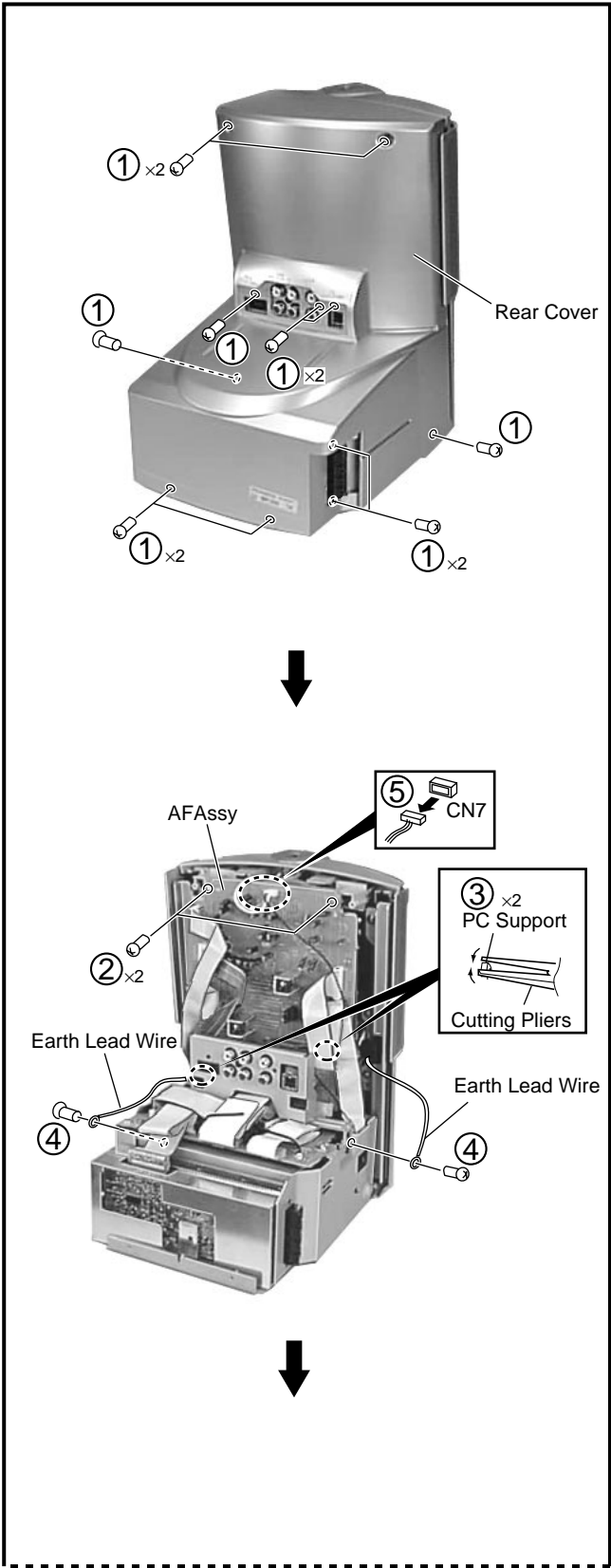


Fig 7.2

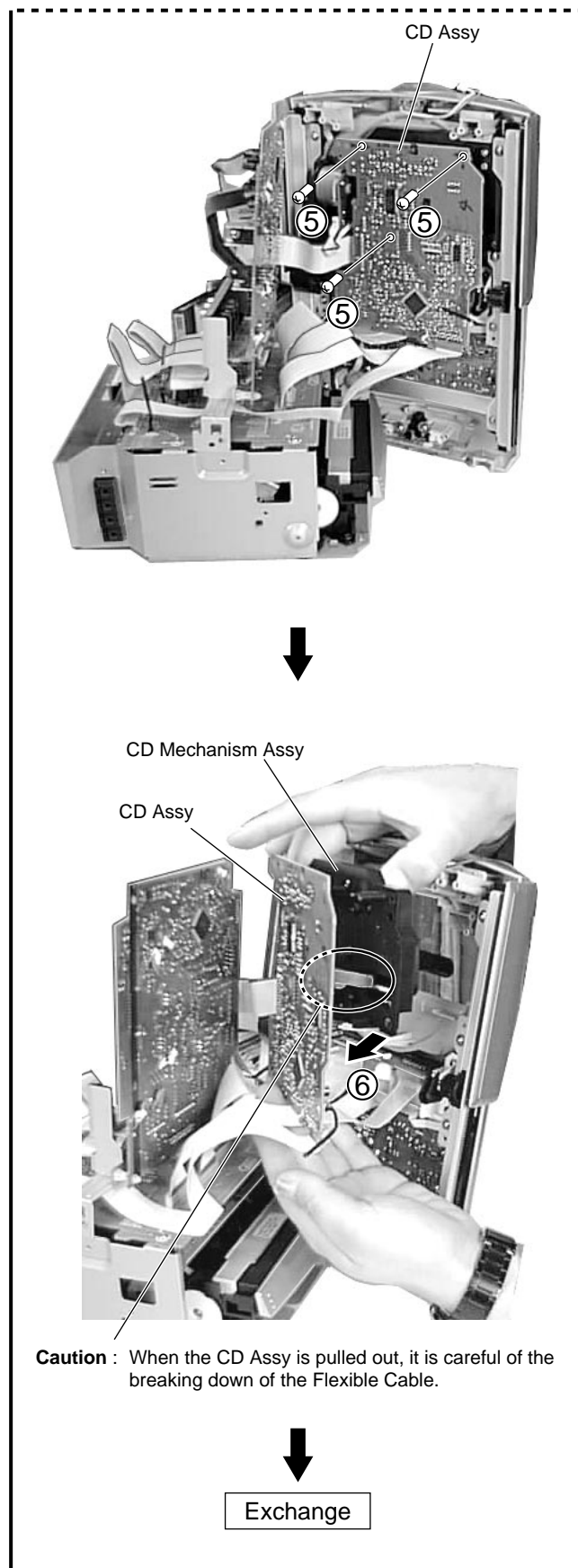
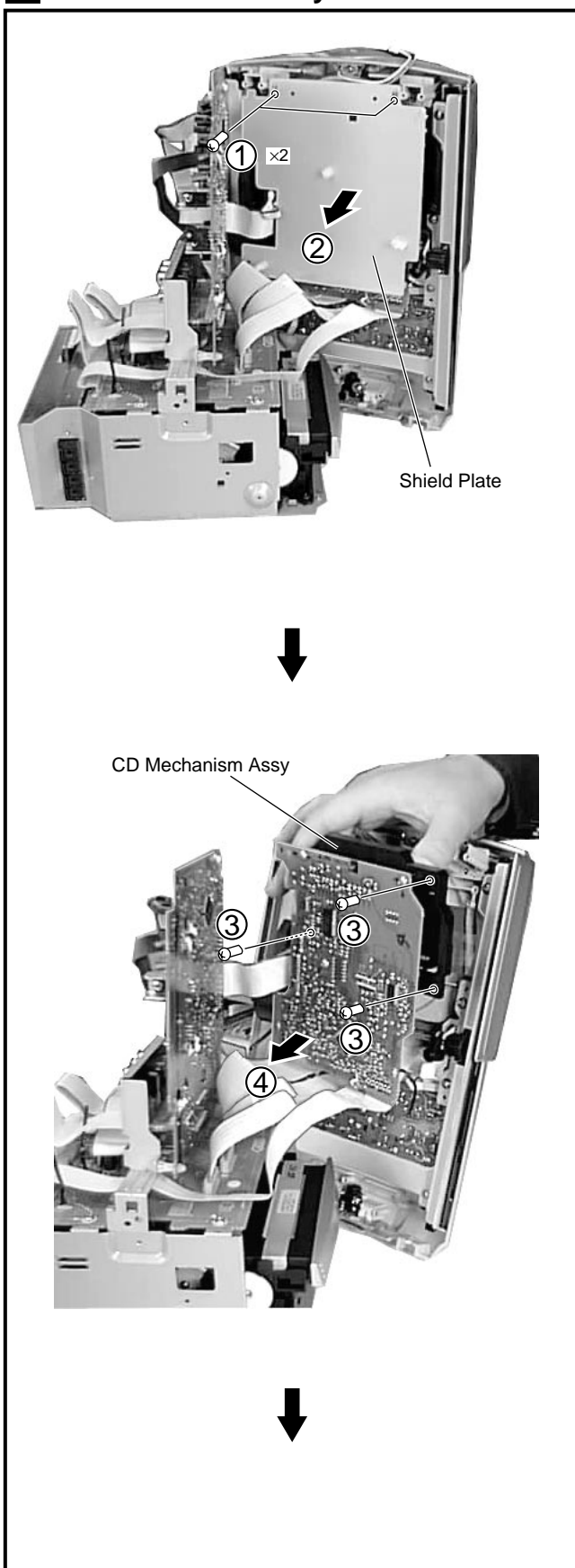
7.2.4 DISASSEMBLY

1 Front Panel Assy

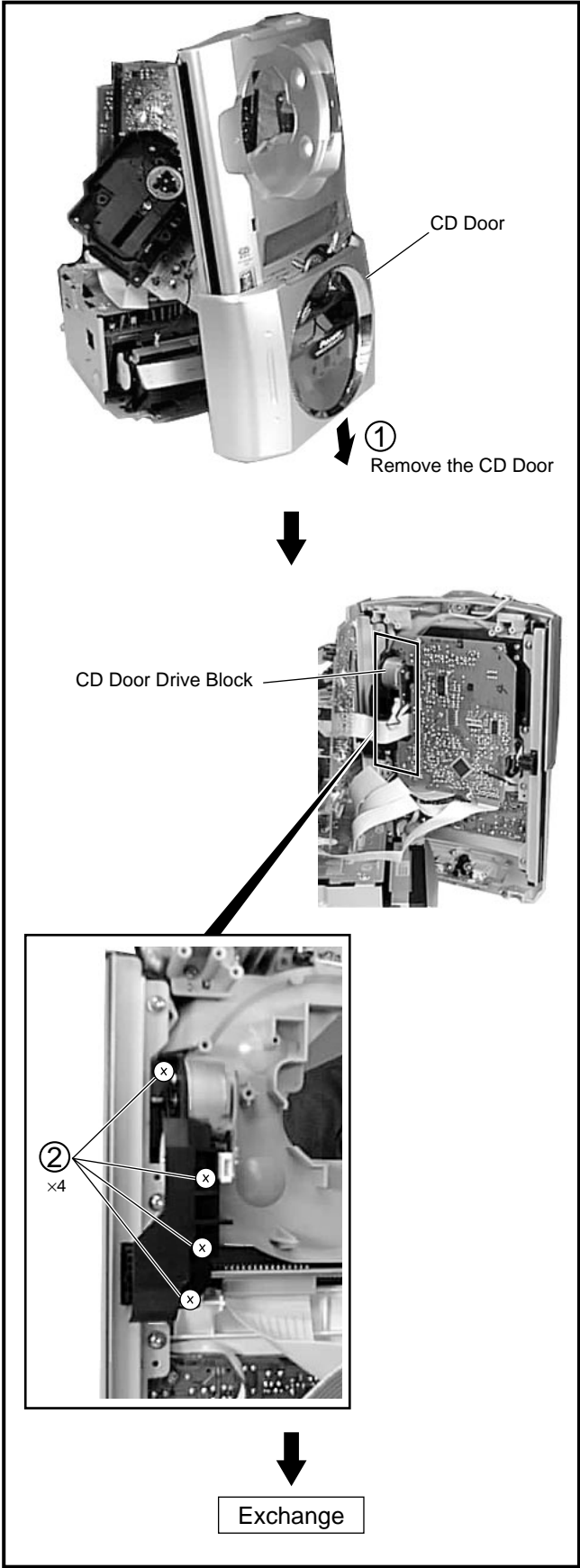
Note : Flexible cables are not removed in the case of the adjustment, but remove the Flexible cables to apply in the case of the exchange or repair.



2 CD Mechanism Assy

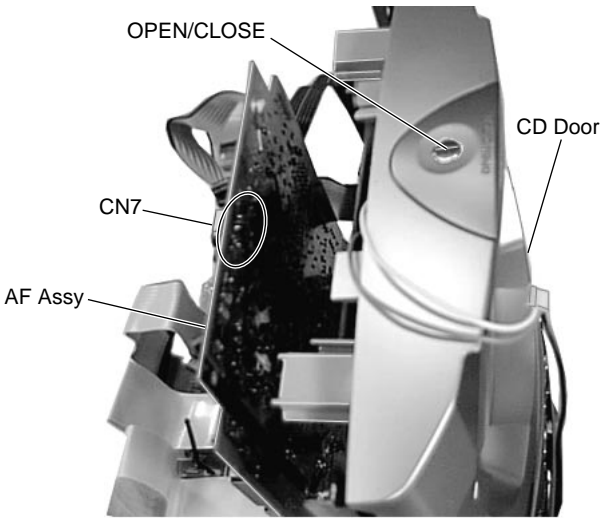


3 CD Door Drive Block

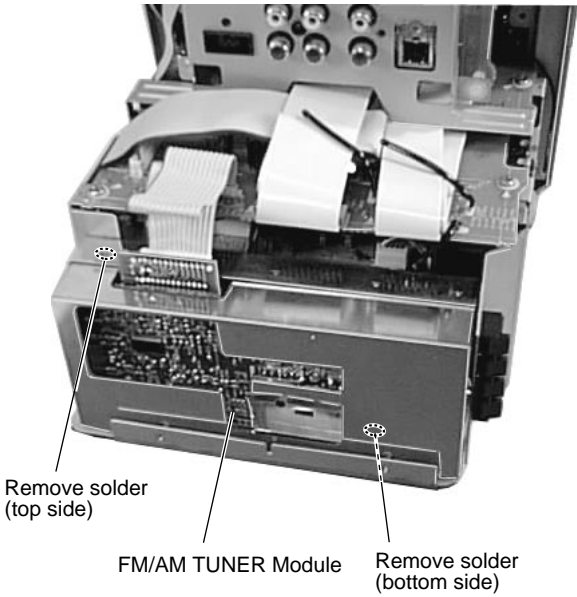


Note

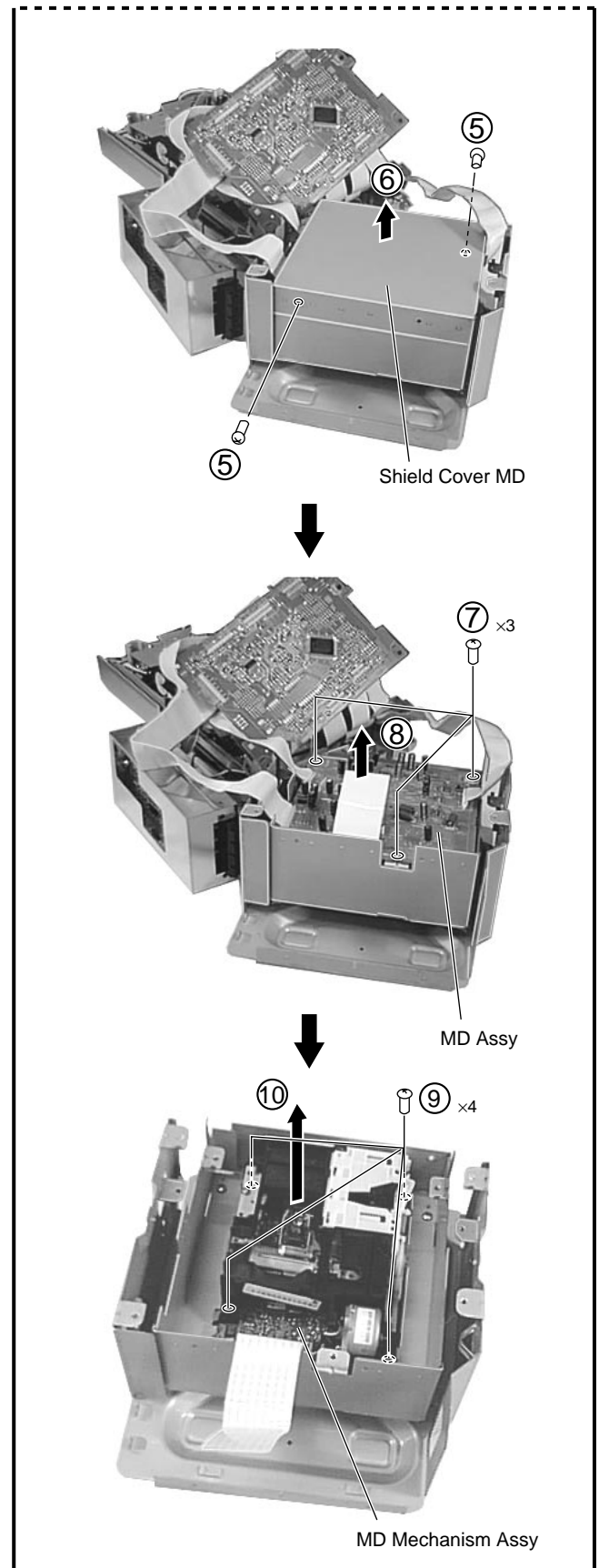
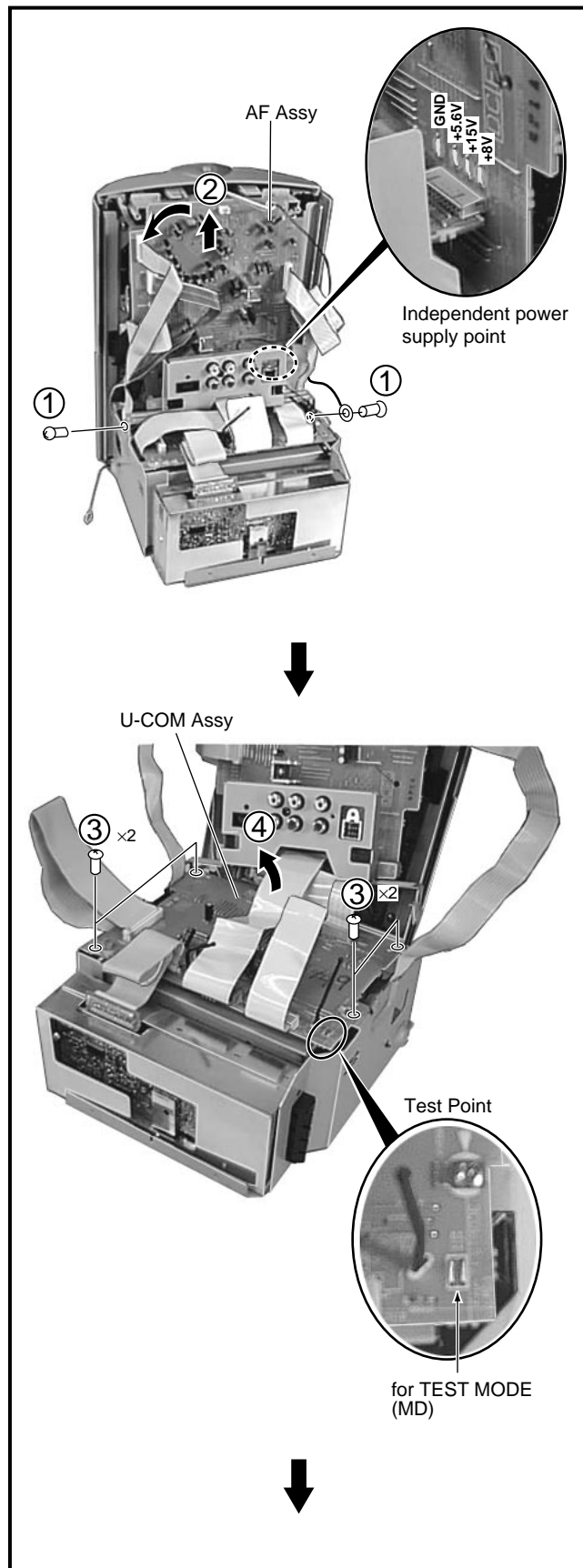
① CD Door OPEN/CLOSE
When a connector CN7 of AF Assy is removed for the touch sensor system, sensor does not work and CD Door can't open and close. CD Door can open when the land of CN7 at the foil side is short-circuited with the finger.



② FM/AM TUNER Module for European model
Shield Case is being soldered in the European model. Remove solder in the case such as exchange.

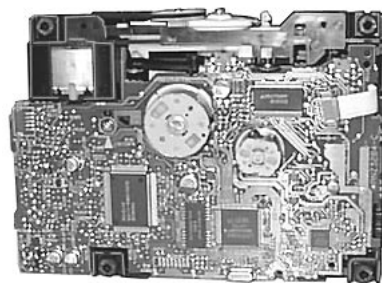
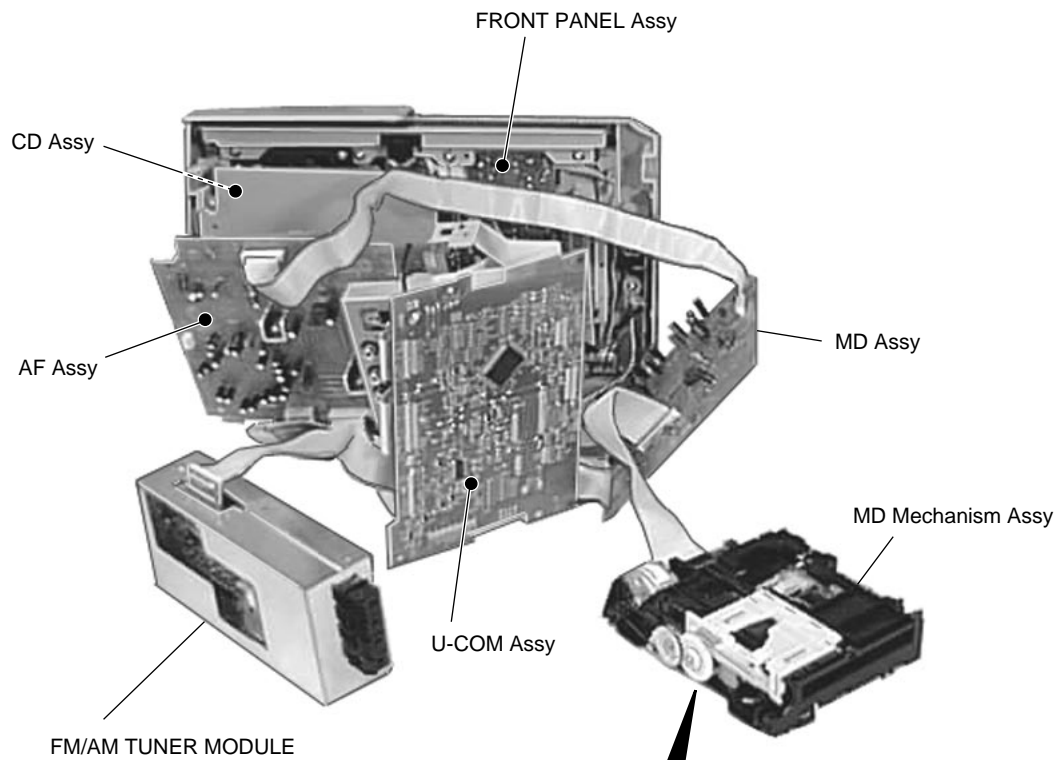


4 MD Mechanism Assy



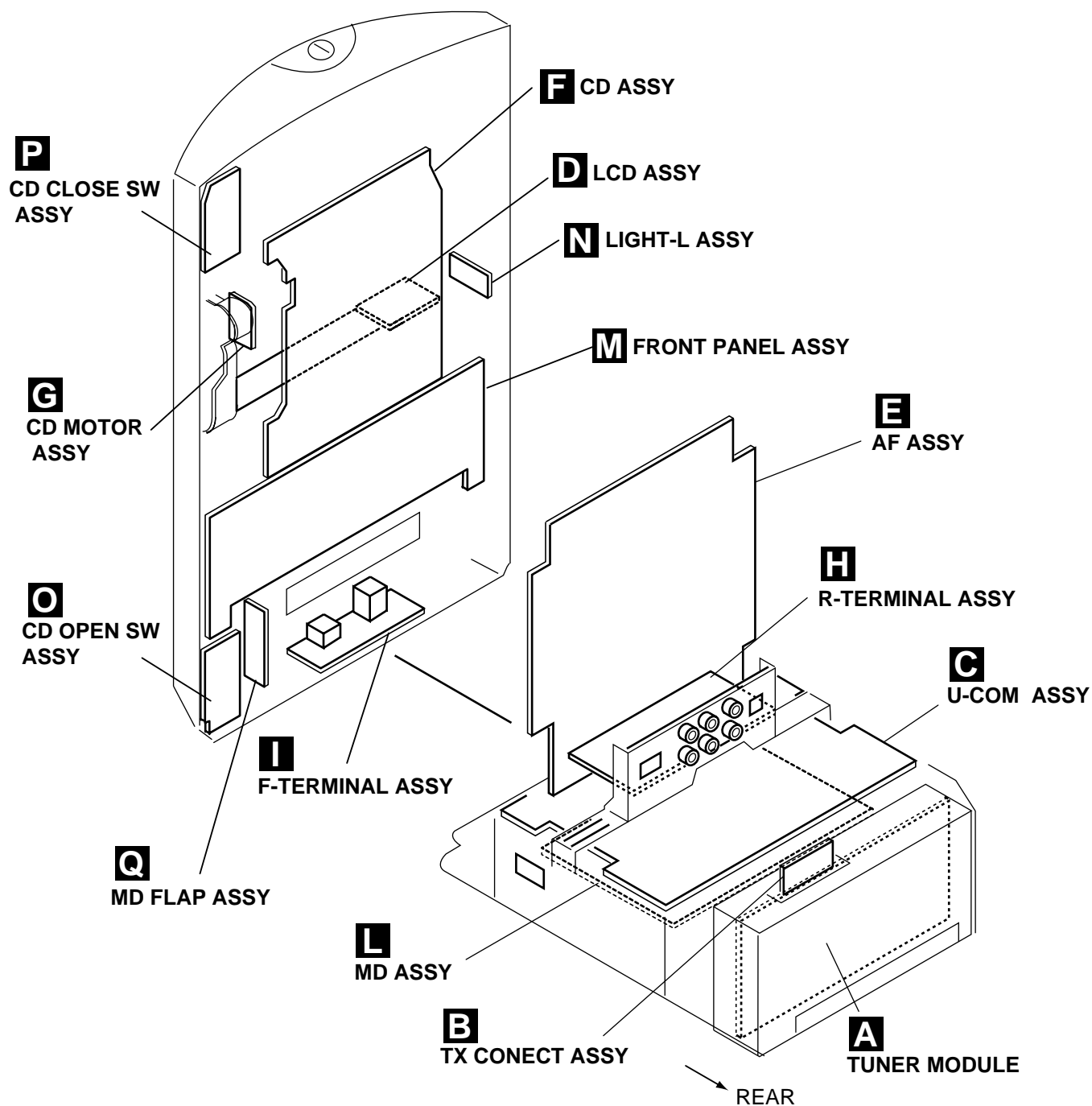
■ How to Diagnose the MD Mechanism Assy

Diagnose the MD Mechanism Assy as shown below.



MD Mechanism Assy (bottom view)

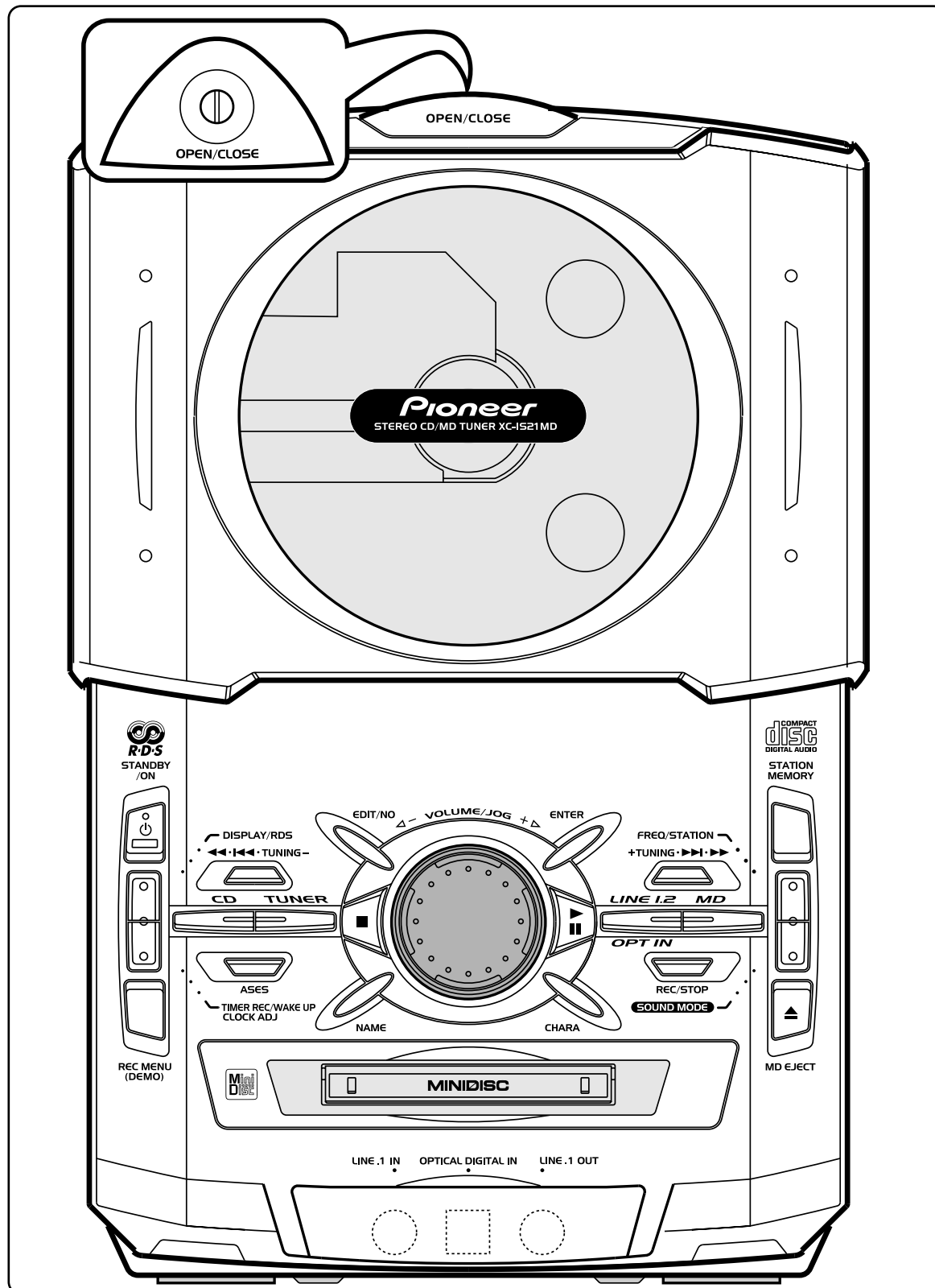
7.2.5 PCB LOCATION

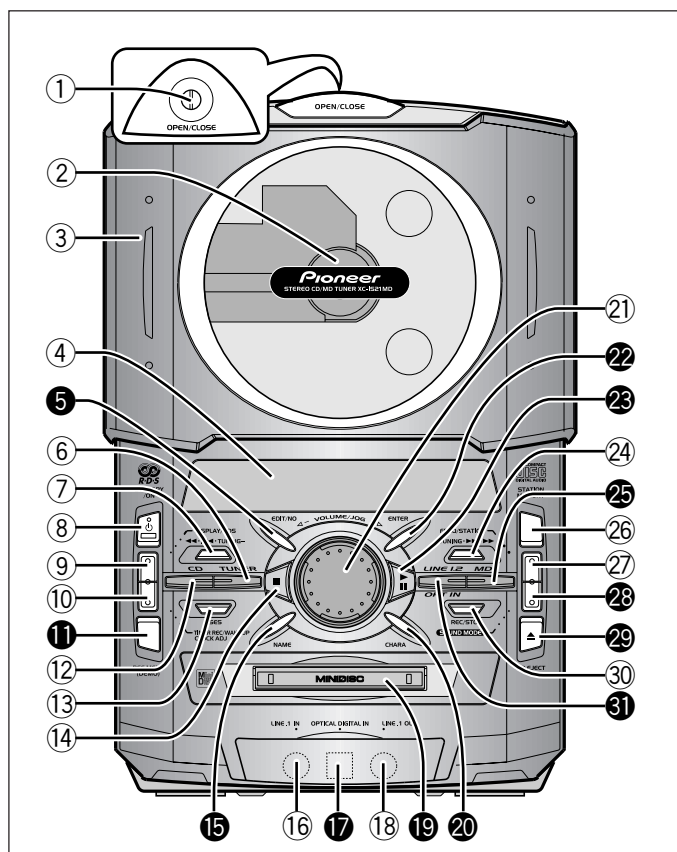


8. PANEL FACILITIES AND SPECIFICATIONS

8.1 PANEL FACILITIES

■ Front Panel





- ① CD cover OPEN/CLOSE touch sensor
- ② CD spindle
- ③ CD slide cover
- ④ Display window
- ⑤ EDIT/NO button
- ⑥ TUNER button
- ⑦ ◀◀ • ◀◀ • TUNING – button
- ⑧ STANDBY/ON button and standby indicator

This is the power switch.

ON : When set to the ON position, power is supplied and the unit becomes operational.

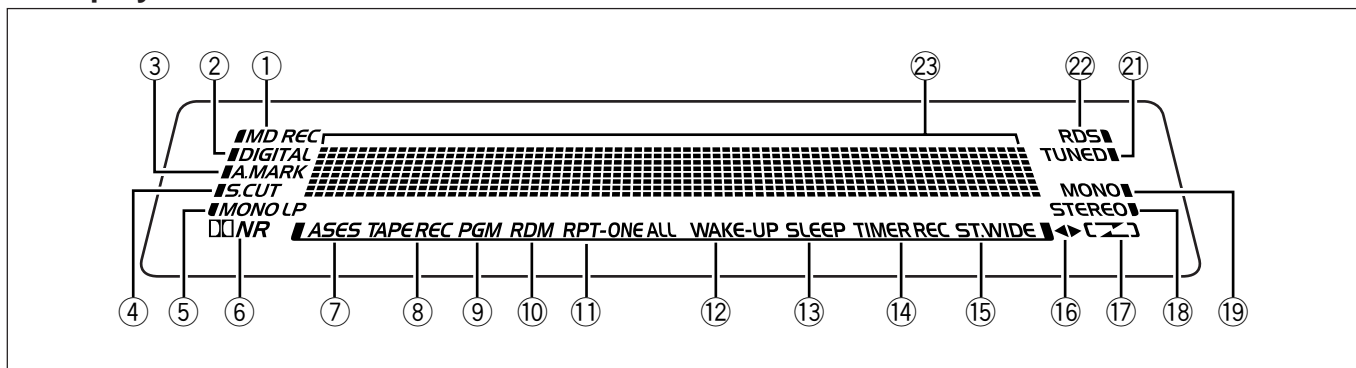
STANDBY : When set to the STANDBY position, the main power flow is cut and the unit is no longer fully operational. A minute flow of power feeds the unit to maintain operation readiness.

- ⑨ DISPLAY/RDS button
- ⑩ TIMER REC/WAKE UP/CLOCK ADJ button
- ⑪ REC MENU (DEMO) button (CD MD Tuner)
- ⑫ CD button
- ⑬ ASES button
- ⑭ Stop (■) button
- ⑮ NAME button (CD MD Tuner)
- ⑯ LINE 2 IN jack
- ⑰ OPT (Optical) IN jack (CD MD Tuner)
- ⑱ LINE 2 OUT jack
- ⑲ MD insert slot (CD MD Tuner)
- ⑳ CHARA (Character) button
- ㉑ VOLUME/JOG dial
- ㉒ ENTER button (CD MD Tuner)
- ㉓ Play/Pause (▶/⏸) button (CD MD Tuner)
- ㉔ TUNING + • ▶▶▶ • ▶▶▶ button
- ㉕ MD button (CD MD Tuner)
- ㉖ STATION MEMORY button
- ㉗ FREQ (Frequency)/STATION button
- ㉘ SOUND MODE button (CD MD Tuner)
- ㉙ MD EJECT (▲) button (CD MD Tuner)
- ㉚ REC/STOP button
- ㉛ LINE 1, 2, OPT IN button (CD MD Tuner)

[CD MD Tuner]

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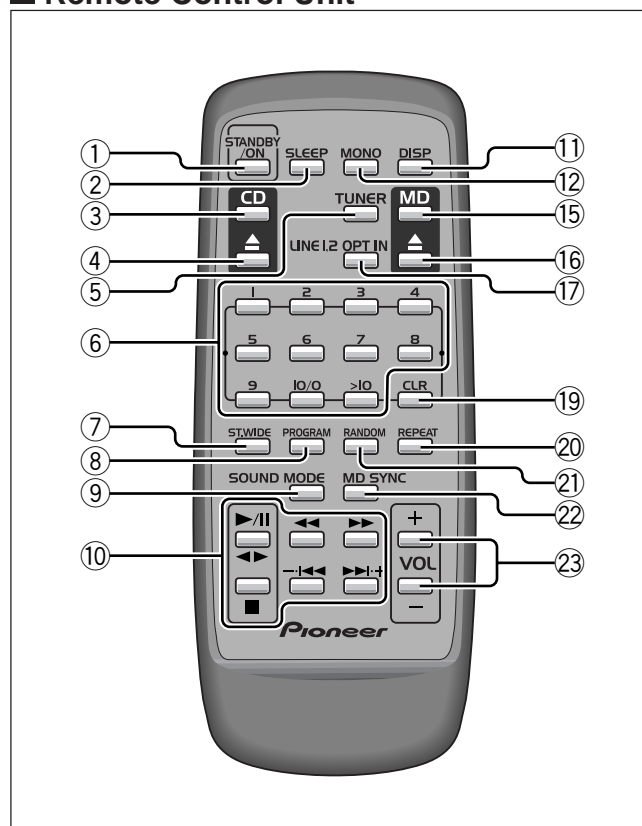
■ Display



Display window

- ① Lights during MD recording operation.
- ② Lights when MD recorder is in digital signal input mode.
- ③ Lights when MD auto marking function is ON.
- ④ Lights when MD space cut function is ON.
- ⑤ Lights when MD recorder is in monaural long play mode.
- ⑥ Lights when Dolby NR on optional cassette deck is ON.
- ⑦ Lights when using A.S.E.S. (Auto Synchro Editing System).
- ⑧ Lights when optional cassette deck is set to recording mode.
- ⑨ Lights during program mode.
- ⑩ Lights during random playback.
- ⑪ Lights during repeat playback.
- ⑫ Lights when setting wake-up timer.
- ⑬ Lights during sleep timer operation.
- ⑭ Lights when setting timer recording.
- ⑮ Lights during stereo wide sound mode.
- ⑯ Lights to indicate tape direction of optional cassette deck.
- ⑰ Lights to indicate reverse mode of optional cassette deck.
- ⑱ Lights during FM stereo reception.
- ⑲ Lights when FM monaural reception is ON.
- ⑳ Lights when setting Beat Cut function.
- ㉑ Lights during radio broadcast reception.
- ㉒ Lights during RDS (Radio Data System) broadcast reception.
- ㉓ Indicates frequency and major operation status.

■ Remote Control Unit



- ① STANDBY/ON button
- ② SLEEP button
- ③ CD button
- ④ CD cover open/close (▲) button
- ⑤ TUNER button
- ⑥ Digit (1 – 9, 10/0, >10) buttons
- ⑦ ST. (stereo) WIDE button
- ⑧ PROGRAM button
- ⑨ SOUND MODE button
- ⑩ CD/MD/TUNER operation buttons
[CD/MD operation]
▶/II: Play/pause button
■: Stop button
◀◀, ▶▶: Manual search buttons
|◀◀, ▶▶|: Track search buttons
[TUNER operation]
◀◀, ▶▶: Frequency down, up buttons
–, +: Memory station no. decrement, increment buttons
- ⑪ DISP (display) button
- ⑫ MONO button
- ⑮ MD button
- ⑯ MD eject (▲) button
- ⑰ LINE 1, 2 OPT button
- ⑲ CLR (clear) button
- ⑳ REPEAT button
- ㉑ RANDOM button
- ㉒ MD SYNC button (CD MD Tuner)
- ㉓ VOL (volume) +, – button

8.2 SPECIFICATIONS

| | | |
|--------------------------------------|--|--|
| ■ FM Tuner Section | | |
| Frequency Range | 87.5 - 108MHz | |
| Antenna | 75 Ω, unbalanced | |
| ■ AM Tuner Section | | |
| Frequency Range | 531 kHz - 1,602 kHz (9 kHz step); 530 kHz - 1,700 kHz (10 kHz step) | |
| Antenna | Loop antenna | |
| ■ Compact Disc Player Section | | |
| Type | Compact disc digital audio system | |
| Usable discs | Compact discs | |
| Wow and Flutter | Limit of measurement (0.001%) or less (EIAJ) | |
| ■ MiniDisc Recorder Section | | |
| Recording Method | Magnetic field modulation overwriting type | |
| Playback Method | Non-contact optical type | |
| Sampling Frequency | 44.1 kHz | |
| Wow and Flutter | Limit of measurement (±0.001% W.PEAK) or less (EIAJ) | |
| ■ Micellaneous | | |
| Dimensions | 205 (W) x 300 (H) x 237 (D) mm | |
| Weight | 3.1 kg | |
| ■ Accessories | | |
| Operating Instructions | 2 | |
| Warranty Card | 1 | |
| FM antenna | 1 | |
| AM loop antenna | 1 | |
| Remote control unit | 1 | |
| Dry cell batteries (AA/R6) | 2 | |
| Power cord | 1 | |
| RCA pin-plug stereo cable | 1 | |
| System cable | 1 | |

NOTE:
Specifications and design subject to possible modification without notice, due to improvements.

■ Accessories

| | |
|--|------------------------------------|
| ① Remote control unit x 1 (CU-XR055) | : AXD7223 |
| ② AA/R6P dry cell batteries x 2 | : VEM-013 |
| ③ FM antenna x 1 | : ADH7005 |
| ④ AM Loop antenna x 1 | : ATB7007 |
| ⑤ System cable x 1 | : ADE7039 |
| ⑥ RCA pin-plug stereo cable x 1 (L =1.5m) | : VDE1052 |
| ⑦ AC power cord x 1 | : XDG3001(ZYXJ) : ADG1156(ZVXJ) |